THE DOCK & HARBOUR AUTHORITY

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Editorial.

The Port of Rangoon.

In the March, 1927, issue of *The Dock and Harbour Authority* there appeared an article on the port of Rangoon, in which several schemes were detailed for the future development of the port; and we are enabled in this issue, through the courtesy of the Chairman of the Commissioners for the Port of Rangoon, to publish details of the construction of a new wharf which will be known as the Strand Market Wharf, and which, in our March 1927, issue, was referred to as Scheme A.

The new wharf, which is 509-ft. long and 40-ft. wide, is situated between the Latter Street and Sule Pagoda Wharves, and is estimated to cost Rs.48,54,000 (£364,000). The proximity of the Latter Street and Sule Pagoda Wharves to the site upon which the new wharf was to be erected necessitated the constructional work being carried out in a very confined space.

The wharf is not yet completed, but the illustrated article which appears on another page gives a graphic description of the almost insurmountable difficulties which were overcome in the construction of this new wharf by the engineers, and which, when completed, will constitute a fine example of British engineering.

Port of Ipswich.

The Ipswich Dock Commission (who are the Ipswich Port Authority and Conservators of the River Orwell) have, for some time past, had under consideration the question of the lighting of the river from Harwich Harbour to Ipswich Dock. An unlighted channel must always be somewhat of a reproach to any port which seeks to provide up-to-date facilities, but it has been necessary to limit expenditure at Ipswich as much as possible during the past few years, while the provision of new quays, equipped with cranes, roads and tramways, has been in progress. The completion of this work has enabled the Commission to proceed at once with the lighting of the river and sanction was given at the April meeting of the General Purposes Committee for the purchase of the necessary buoys. The plans prepared by the Commission's Engineers have been approved by Trinity House, and it is hoped that the work of laying down the buoys will be completed by the coming winter.

Trade and Shipping at Hull Docks.

Trade and shipping at the Hull docks in the first quarter of the year were less than normal and the import trade generally below the level of the corresponding three months of last year. Arrivals of wheat and kindred cereals, oil seeds, nuts and kernels, etc., all showed a decline. A satisfactory feature is the growth in the exports of coal. The total shipped to places abroad from the Humber ports exceeded 1,365,000 tons and were 83,000 tons in excess of the first quarter of 1929 when some advantage was gained for Yorkshire coal by the increased demand from the Continent consequent upon water transport being held up by ice for several weeks.

Manchester's Handicap.

It has been stated recently on behalf of the Manchester Ship Canal Company and shipowners using the docks, that Manchester is at a disadvantage compared with other ports because of the restrictions as to working hours. The ban by the transport workers' unions on the working of overtime makes it impossible for a night shift to be employed when the pressure of traffic warrants it, because they hold that the trade of the port does not warrant any extension of working hours, since employment cannot at present be found for anything like the number of men available, and that the shipowners are not now making full use of the facilities which the port offers. According to the men's side of the case, there has been developed in recent years a system of loading direct from ships to railway wagons in regard to all classes of goods except cotton and grain. This limited the number of men who could be employed at one time and meant that the sheds alongside the docks were not all put into use. If the sheds at all the docks were used, there was ample labour available to deal with the port's trade during existing ordinary day-time hours, and so to ensure that the ships were able to turn round in considerably less time than at present. The normal hours of working are from 8 a.m. to 5 p.m. from Monday to Friday and to 12 noon on Saturday. The Union assents to morning overtime from six o'clock at double pay for the two hours and for four hours in the evening—6.15 o'clock to 10.15—at time-and-a-half. Beyond that time until 12.15 o'clock midnight, when work compulsorily ceases, the pay is six shillings, however short the period worked. Work is also permitted until two o'clock p.m. on Saturday at double rates. This exceptional night and Saturday overtime is only worked on ships that are proceeding immediately to sea.

The Manchester Ship Canal Company, of course, deny the assertion that because work is not found for all available men, that an extension of the present working hours is unnecessary and further that shipowners are not using to the full the facilities which the port offers. Neither the port authority nor the shipowners require an extension of the present working hours except in cases of urgency and this is by no means a daily occurrence, but they do want the facility which is generally granted to employers at the other ports. Obviously shipowners do not want men to work more overtime than is absolutely necessary, because of the exceptionally heavy cost, but they are prepared, on occasions, to bear the burden of cost in order to sail their ships to meet the requirements of trade. Apparently the only suggestion the Trade Union group secretary can make is that goods which are at present discharged direct from ship to railway wagons should be landed to quay. It is true that ships are not generally discharged as quickly when goods are loaded direct to wagons as when they are landed, but quay services—receiving goods from ship into sheds and re-delivery to wagons and so on—would cost the owners several shillings per ton extra. The Manchester Docks have been specially designed and equipped with railway lines alongside all ship berths, in order to provide a facility which materially cheapens the cost of handling goods.

Further Construction of the Kusten Canal.

The order has now been given for the completion of the remaining portion of the canal from the Oldenburg frontier to the Bockhorner Chaussee in Prussian territory. The stretch is about eight kilometres long, on part of which the moor has been removed, and is to cost Rm.3,400,000. Thirty-seven firms from the whole of Germany competed for the contract. After the construction of these eight kilometres, which is not possible by the end of this year, the Kusten-Kanal will be completed from the Lower Weser (Elsfleth) up to five kilometres from the Dortmund-Ems-Kanal (Haar). Some work in Schwaneburg Moor is still necessary on the Oldenburg stretch, where a lock is being built in the Friesoyther-Kanal, in order to permit entry to the Kusten-Kanal direct from the Friesoyther-Kanal. According to a declaration of the Reichs Traffic Minister the connecting link of the Kusten-Kanal is also to be ready at the same time as the other canal constructional work. It may, therefore, be expected that work will also shortly be commenced on this remaining stretch. According to the decision of the Reichs Government the construction of the connecting piece is to start if the extension of the Dortmund-Ems-Kanal is not commenced later than in 1931. If the Dortmund-Ems-Kanal is extended the Kusten-Kanal will join the new Dortmund-Ems-Kanal at its present terminus. Otherwise a special connecting stretch will be required.

Jugoslavian and Grecian Port Matters.

DURING 1929 a further 500 metres of quayage have been built at Spalato, and the area of the moles has been increased by 21,400 square metres. Now steps have been taken to furnish these quays with unloading facilities. At Zelenika a new mole of 200 metres has been built with an area of 3,800 square metres. Also at Ragusa things have improved. The length of the quays has been increased by 268 metres and the area by 17,862 square metres. Six new dredgers have been purchased and extensive dredging works are being carried on. According to the opinion prevailing in Jugoslavian business quarters there is still much to be done in connection with the exploitation of the free zone in Saloniki, which includes an area of 94,000 square metres with a mole measuring 200 metres in length and 50 metres in breadth sheltered by a breakwater of 150 metres. There is space for two ships at the time on this mole with about 2,000 tons of cargo each. On this mole there is a grain silo which can handle 4,000 tons of wheat or other cereals, and two warehouses having a capacity of about 5,000 tons of goods in all, as well as a covered area for cattle which is the main item of the Jugoslav trade going through the Port of Saloniki. These facilities are in a very poor state, and according to the advice of Jugoslav experts the railway facilities connecting the zone with the Saloniki railway station have entirely to be renewed. This situation has diverted the Jugoslav transit trade from the Jugoslavian free zone to the Saloniki Greek free port which has much better facilities. It would appear, however, that since Jugoslavia is considering the possibility of the Greek Government altering their point of view in connection with the question of allowing Jugoslav trains with Jugoslav personnel to go through the line between Djevdjelia and Saloniki, they have worked out a scheme for the reconstruction of the free zone.

It is noted in the first place that the warehouses and the silos should be repaired and fitted with up-to-date machinery, particularly with the view of rendering possible the sampling of Jugoslav wheat which is exported to-day in bulk without distinction. It is estimated that such improvements would cost about 10 million dinars. Furthermore, it is planned to increase the facilities for the cattle transit trade which in 1929 totalled about 1,200,000 head, and to fit the free zone with facilities to handle the mineral exports from Jugoslavia. In connection with the development of the wheat transit trade through the Jugoslavian free zone at Saloniki it should be taken into consideration that during 1929 there has been active competition on the side of the Roumanian ports, and the Roumanian Government has decided to make Galatz a free port. According to the statistics which have just been published by the Jugoslav Minister for Commerce, 91.48 per cent. of the Jugoslav exports to Roumania totalling 446,811 tons included during the period from January to November, 1929, shipments of wheat through the Danube and Braila. If one considers that the total exports of wheat reached during such a period about 510,000 tons, it can easily be seen that very little is being left for Saloniki. On the other hand it appears that there is considerable trouble in connection with the operation of the Jugoslav free zone at Saloniki, since first it was operated by the Minister for Finance, but recently it has been transferred to the Minister for Commerce and Industry.

Statistics concerning shipping at Jugoslav ports during 1929 have not been published yet, with the exception of the port of Sussak where the total trade reached 697,000 tons of goods unloaded and loaded against 563,921 tons in 1928, 278,080 tons in 1927, 210,241 tons in 1926 and 343,311 in 1925. Sussak has reached an average traffic of about 530 tons on every metre of quay yearly. Before the war, when it was part of the port of Fiume, Sussak had an average traffic of 420 tons on every metre. If it is taken into consideration that new facilities have been built at Sussak since it was no longer a part of the port of Fiume, it will be seen that Sussak has reached exactly the pre-war trade.

It is announced that the Jugoslav Government has taken into consideration the question of the organisation of the General Bonded Stores at Sussak, and while in many quarters it was urged that the free zone should be created also at Sussak to prevent the damage which may result to this port from the creation of the free zone at Fiume, authorities believe that better results will be attained by the improvement of facilities and by the exploitation of the Martinschizza Bay which is about 5 miles from Sussak, and where quays with deep water can be built.

Only the future will show which is right, but it is certain that something will have to be done, as at the moment congestion is again experienced at Sussak, and three ships are waiting on the open sea for berthage space.

The situation is much better at Split, where trade is favoured by the consumption of the important industries existing there, and by those which will be created with the favour of the large water powers of Dalmatia. Calcium Carbide factories and cement factories are the chief factors of the British coal imports into Jugoslavia, the greatest part of which, is unloaded at Split, and amounting to about 200,000 tons yearly, as these industries cannot use national coal. Practically all factories have their own quay with large facilities. The opportunity of erecting an oil refinery and a rice mill is being considered, and, pending the construction of these factories, an oil coast station has been built and vast quantities have been imported directly from Split. New breakwaters are being built in order to ensure the safety of vessels in the present inner harbour, but quays are very poor. However, unless foreign capital is invested for the construction of this port, it has to be feared that little progress will be made as far as warehouses and cranes are concerned, and there is no doubt that such enterprise would represent a good investment, as it is certain that trade at Split, owing to the industrial development of the town, is bound to increase. Shipping at Split was no more than 650,000 tons in 1925, while is was about 1,200,000 tons in 1929.

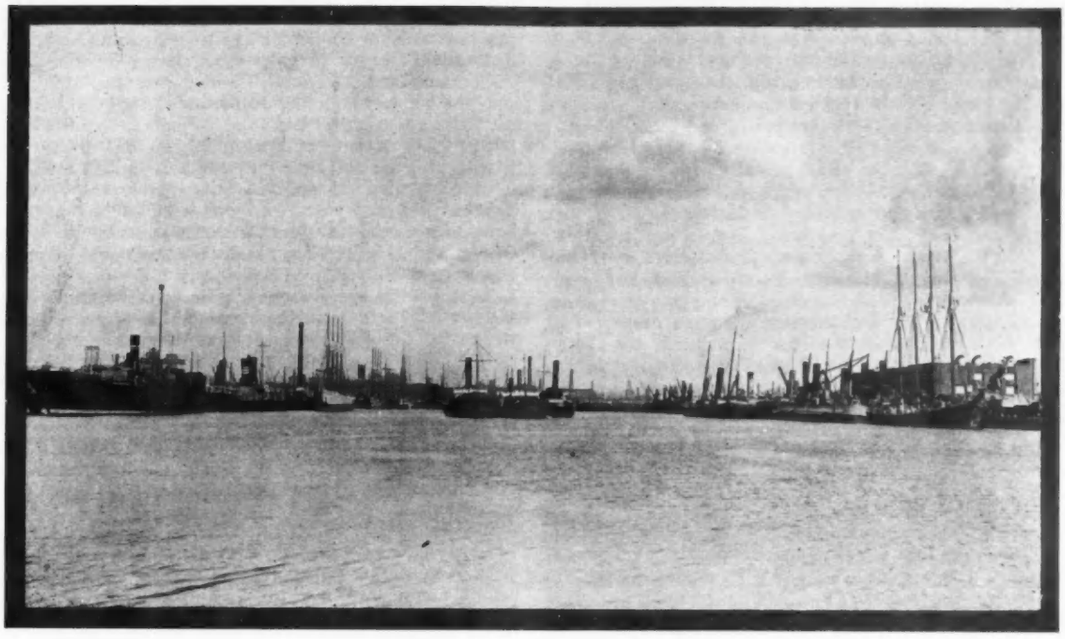
Jugoslav steamship companies are contemplating an increase of steamship services. The Jugoslavenski Lloyd has issued a statement that they will establish a new service from Dalmatia to Chile; and one from Dalmatia to London, Hamburg and Rotterdam; and the Oceania Parobrodarstvo d.d. a new service from Dalmatia to Spain to meet the possible progress of trade between the two countries in consequence of the new treaty of commerce. However, it would appear that facts have not confirmed the expectations, and that trade is rather dull. The Messageries Maritimes have resumed their monthly service between Marseilles and Sussak, while the Lloyd Triestino has included in the schedule of their services to the Far East, a call at Split. Efforts are also made to develop the tourist trade along Jugoslavian coasts and it is announced that the Jadranska Plovidba d.d. as well as the Dubrovacka Plovidba d.d. will renew the tonnage engaged on these services, but nothing appears to have developed from the creation of the combined service to be started by the Société Générale des Transports Maritimes à Vapeur de la Dalmatie vers l'Argentine.

On the other hand it is stated that the Czechoslovak Air Service will shortly start a new air line from Prague to Zagreb, from where it will be extended to Sussak and Split with airplanes of the Jugoslavian Air Navigation Co. and that airports will be built for this purpose both at Sussak and Split.

Although Greece has an important mercantile marine it has never had modern harbours in the true meaning of the word. However, for some time past important harbour extensions have been in progress at Pireaus, Patrass, Saloniki, and Candia. Trade at Pireaus has reached about 2,000,000 tons yearly and, therefore, the facilities built several years before the War when trade was not so active have become insufficient. About two kilometres of new quayage are under construction at Athens, and along which there is a depth of water from 6/9 metres. These new piers will be built in concrete and will be fitted with six 2-ton electric cranes, as well as with two-storey warehouses, which, if required, can be enlarged to three or four storeys. The height of each floor will be about 7 metres and large openings will be provided to ensure the best ventilation. Dredging work is in progress at Pireaus in order to increase the depth of the outer harbour to 11 metres. No less important harbour enlargements are being carried on at Candia (Creta) and they consist of the construction of two moles, one of which is to shelter the water of the inner harbour and measures 1,200 metres in length. Another breakwater is also under construction and both of these works are to be terminated during 1931. In connection with these harbour extensions, it should be noted that they are made necessary by the fact that during the last few years practically all the liners cruising in the Mediterranean have included the call at Pireaus in their schedule, while many lines are establishing the connection between the ships coming from the West and bound for Stamboul and the Black Sea, with the ships coming from Alessandretta, and Smyrna and bound West, at this Greek port. On the other hand Italo-French competition is growing larger and the Messageries Maritimes and the Cie. Paquet have cut down rates from French and Italian ports to Greece and Turkey.

Great activity is shown in the construction of harbours at Albanian ports. About 500 metres of the main mole at the new harbour of Durazzo, have already been completed, but it would appear that the new port as a whole will not start its activity before 1931.

The Port of Preston.



A View of the Port of Preston.

The following statistics and information regarding the Port of Preston have been kindly furnished by Mr. J. G. Merriweather, M.Inst.T., the General Traffic Manager and Dock Superintendent:

Comparative figures of the number of vessels, their net registered tonnage, and the total imports and exports for the year 1928 and 1929:—

Year Jan. to Dec.	No. of Vessels.	N.R.T.	Imports Tons.	Exports Tons.	Total Imports and Exports Tons.
1928 ...	1,091	390,638	577,199	181,401	758,600
1929 ...	1,148	441,084	660,324	161,300	821,624

The chief traffics were:—

	1928 Tons		1929 Tons
Imports::—			
Wood pulp	193,178	...	252,403
Timber	130,390	...	135,176
Stone	58,068	...	62,579
China clay	33,452	...	35,300
Motor Spirit	93,599	...	102,973
	Animals.		Animals.
Live Stock	50,112	...	82,035
Exports:—			
	Tons.		Tons.
Coal and Coke	169,566	...	150,219

Last year it was hoped for a better result for 1929. The figures now given indicate that this anticipation was realised, the improved position being entirely due to the increased imports of the staple commodities.

Two features stand out very prominently with regard to imports—wood pulp and motor spirit. During the year over a quarter of a million tons of wood pulp were handled. Preston is in great favour with the wood pulp merchants, who appreciate the quick and satisfactory handling of goods and vessels. For the first time in the history of the port the imports of petrol during this period exceeded the 100,000 tons mark. To illustrate the steady growth of this traffic, it is better to repeat the simple comparison made last year. Motor spirit commenced to arrive at the port in appreciable quantities during 1923. The total import for that year was 3,661 tons, or about 1,100,000 gallons, compared with 102,973 tons (representing approximately 31,000,000 gallons) for the year ending December 31st, 1929.

It is also gratifying to note an increase in the timber import. The china clay import, although higher than last year, would have been still further improved but for the depressed state of the cotton industry. Stone imports are probably higher because of the road schemes instituted for the relief of unemployment.

Another favourable feature is the increase in the live stock import. In consequence of increased shipments, a larger steamer is having to maintain the service between Dublin and Preston. The vessel is the "Lady Meath," 732 tons net register, 321.2-ft. long, 40.1-ft. beam, and owned by the British and Irish Steam Packet Co., Ltd. The "Lady Meath," with accommodation for carrying 774 cattle and 1,500 sheep, in addition to general cargo, is a new vessel, and her maiden voyage was made to Preston in April last. She has a fine turn of speed, and was specially built for this service. To accommodate the larger number of animals it was necessary for the Corporation to extend their lairage capacity, and a total accommodation for 800 cattle and 1,700 sheep has been provided, together with additional slaughtering facilities.

Turning to exports, there is a decrease from 181,401 tons in 1928 to 161,300 tons in 1929. This is accounted for by the decreased shipments of coal and coke. This traffic is far below normal, and it is to be hoped that 1930 will see some recovery.

Here are some interesting features:—

The largest inward cargo dealt with during the year was one of 5,374 tons of wood pulp and 44 tons of paper, per s.s. "Garryvale," from Kotka, docking draft 20-ft. 6-ins.

The largest drafted vessel docked was s.s. "Thurston," drawing 21-ft., 8-ins., loaded with 4,500 tons of wood pulp from Sweden.

The largest vessel as regards displacement, irrespective of weight of cargo carried, or docking draft, was s.s. "Shenandoah," net registered tonnage 4,058 tons, length 416¾-ft., breadth 56-ft. 1-in.

During the year 14 ocean-going tankers were received from foreign ports.

All the vessels referred to were promptly docked, without lightening—in fact, this practice, which was at one time quite customary, has now practically ceased, due to the improved condition of the river.

Cargoes are now received from Sweden, Norway, Finland, Russia, Jugo-Slavia, Germany, Esthonia, Belgium, U.S.A., Holland, Portugal, Lithuania, France, Spain, Northern Africa, Latvia, and Canada.

Large quantities of china clay, slates, stone, timber, plasterers' laths, whiting, carbide, paper, cement, grain, etc., are imported, and stocks are always available.

The facilities of the port are continually being improved and extended to attract trade, and the policy is having beneficial results.

The Hapag-Lloyd Agreement.

Meetings of the shareholders of the Hamburg-America Line and the North German Lloyd, held respectively in Hamburg and Bremen on April 15th, unanimously approved of the 50 years' agreement between the companies. The agreement is antedated from January 1st, 1930. Notice to terminate it may be given 5 years before the expiration of the 50 years. The agreement is automatically prolonged for further periods of 10 years if such notice is not given.

The De-rating of Dock Undertakings.

THE Scottish statute on this subject (the Rating and Valuation Act, 1928) provides Section 5 (1): "In this Act the expression 'Freight-transport hereditament' means all or any of the following hereditaments: . . . (c) A hereditament occupied and used wholly or partly for dock purposes as part of a dock undertaking being an undertaking whereof a substantial proportion of the volume of business is concerned with the shipping and unshipping of merchandise not belonging to or intended for the use of the undertakers: . . . (2) 'Transport purposes' means all or any of the following purposes: . . . 'dock purposes,' that is to say, all purposes connected with the shipping or unshipping at a dock of passengers and their luggage, or of carriages, parcels or merchandise, or the conveyance or transport thereof by a railway forming part of a dock undertaking, including the construction, maintenance and repair of all ways, works, machinery and plant used in connection with the undertaking, or connected with the provision of accommodation for vessels and their stores, equipment and tackle (including fishing tackle) whether for purposes of repair or otherwise. Then, in Sub-Section (3), a 'dock undertaking' is defined as an undertaking carried on by a dock authority, but also includes any other undertaking comprising as part thereof a dock in so far only as its business is carried on at or in connection with that dock."

In the appeal by the *Clyde Trustees and Others v. The Inland Revenue*, 1930, S. L. T. 285, four different categories of subjects were dealt with. The first category consisted of subjects belonging to the Clyde Trustees, within the dock, and let by them to tenants for the purpose of being used for dock purposes. The Officer of Inland Revenue conceded that such premises should be derated.

The next category of subjects consisted of premises occupied by H.M. Customs. The Clyde Trustees were under certain statutory obligations to provide facilities for collecting customs. These obligations had already been fulfilled, but the particular building in question was not erected under any statutory obligation. If it had been constructed in pursuance of the Trustees' statutory obligation on the part of the Clyde Trust, it might fall to be regarded as part of their undertaking. But, as the Trustees were under no obligation to provide it, it was considered too remote from a dock purpose to bring the premises within the statutory definition, and derating was refused. But on this particular point the judgment was not unanimous, one of the judges being of opinion that as it was a necessary incident of the transport of goods and luggage that they should be examined, such an examination might be—as was suggested—a hindrance rather than a help to traffic; but anything which diminished this hindrance might be said to facilitate traffic and a properly-equipped Custom House at the docks facilitated the operations of the customs officials and made for the convenience of everyone concerned, including the convenience of the harbour authority, whose interest and concern it was that matters should run smoothly. Regarded in that light it did not seem unreasonable to hold that the premises here in question were provided for a transport or dock purpose.

The other two categories consisted of buildings on ground belonging to the Trustees but let to tenants for the purpose of the latter erecting the buildings thereon. Some of these buildings were built on ground within the precincts of the dock and others on ground outside the precincts. Counsel for the Crown conceded that these premises were used for dock purposes; but he contended that they were not entitled to be derated because they were not used for dock purposes *as part of the dock undertaking*. They had not been erected by the Trustees and were not owned or occupied by the Trustees, and the functions carried on in them were not controlled by the Trustees. In these circumstances the Court held that it would be stretching language unduly to say that they were in any reasonable sense part of the Trustees' statutory undertaking.

The reasoning which prevailed in the case of *North British Railway Co. v. Greig* (1866, 4 M. 645) was held to apply. In that case the question was whether a refreshment room situated in a railway station, which was let furnished, at a fixed rent, to a tenant on condition that it should be used exclusively for the accommodation of travellers by the railway, and subject to regulations made and to be made by the company ought to appear in the Burgh Valuation Roll at an annual value fixed by the Burgh Assessor. The Court were of opinion that it ought and that the contention put forward by the railway company that it was really part of the railway undertaking and fell to be valued by the Assessor of Railways and Canals was unsound.

And finally, as regards the ground, forming the site upon which the buildings were erected the Crown conceded that so far as they were erected within the dock proper, the ground on which they stood was entitled to be derated, but that as regards the site of buildings outside the dock proper, it was not truly part of the dock undertaking and therefore could not be derated.

New Orleans Shipping for March, 1930.

In the Port of New Orleans for the month of March, America led in the number of vessels arriving, and in gross tonnage.

One of the little Central American Republics, Honduras, came second in the number of vessels, but was third in tonnage, as the British ships to arrive, although less in number, were of greater carrying capacity than the Hondurans.

The Scandinavians, proverbial navigators of early coherent history, and followers of the Phoenicians in finding new sea routes to strange countries and unknown parts of the globe, collectively maintained their standard, but individually ranked below the leaders.

Altogether ships of fourteen nations, 255 in number and representing a gross tonnage of 1,009,824, arrived in the port during the month of March. This shows a decrease of eight ships as compared with March of 1929, and a loss in tonnage of 32,576.

The arrivals were as follows:—

Flag	Number Vessels	Gross Tons
American	144	612,546
British	21	117,315
Brazilian...	2	9,298
Belgian	1	5,086
Danish	5	11,866
Dutch	2	17,683
French	6	41,488
German	5	12 523
Honduran	34	86 896
Italian	4	22,847
Japanese	1	9,445
Nicaraguan...	5	7,837
Norwegian	21	42,213
Swedish	4	12,781
Total	255	1,009,824

While deep sea arrivals in the port showed a decrease in number of vessels and gross tonnage for the month of March in comparison with the same month last year, there was a most gratifying increase of inland watercraft above 25 tons measurements arriving in the harbour. These boats consisted of barges, self-propelled; tugs, towing barges and steamboats. Of these there were 311 arrivals, representing a gross tonnage of 96,199, or an increase in number of boats over March, 1929, of 95, and an increase in tonnage of 21,438. In addition to the craft already mentioned in the inland waterway class to come into the port during last month, there were two derricks of 689 tons; four colliers of 762 tons, and one dredge of 133 tons.

Another and a larger increase for March, 1930, as compared to March, 1929, is in evidence in the figures covering operations in the Inner Harbor-Navigation Canal (the Industrial Canal). During March, 1930, 880 vessels of all types and descriptions used the Canal with a total tonnage of 347,309. This beats the record of March, 1929, by 265 vessels and 43,750 tons.

While the gross tonnage of vessels of the deep sea class arriving in the harbour during March, 1930, showed a loss in tonnage of 32,576, as compared to March, 1929, the gross tonnage of vessels using the public docks in March, 1930, was 777,313, an increase of 116,305.

The tons of cargo paying tollage for the period was 333,651, a decrease compared to March, 1929, of 53,921 tons. The bunches of bananas handled by the conveyors at the docks for March, 1930, numbered 1,646,065, a decrease of 244,710 bunches as compared to the same term last year. The number of deep sea vessels to depart from the port during the month was 254, a decrease of four vessels as against March of last year.

Pageant of the Sea.

Britain's £100,000 Show at Antwerp.

Some details of the British Government's most important exhibit since Wembley—the British Section of the International Maritime and Colonial Exhibition at Antwerp—are announced by the Department of Overseas Trade.

The Exhibition, which is being held on the outskirts of Antwerp, opened on April 26th and lasts until October. A "British Week" is to be held from July 17th to 23rd, which will include the Belgian National Fête Day—the hundredth anniversary of the treaty giving Belgium her independence in defence of which Britain entered the war in 1914.

The British Government is spending £100,000 on its exhibit, which will be largely maritime. The building, designed by Sir Edward Lutyens, with interior decorations by Professor Richardson, stands on the bastions of one of the old forts, and it commands a view of the whole of the rest of the Exhibition, which is roughly the size of the British Empire Exhibition, Wembley.

Some twenty countries are taking part in the Exhibition, each with its own pavilion, and they include Canada, Italy, France, Holland, Norway, Sweden, Portugal, Finland, Latvia, Lithuania, Brazil, Chile, Columbia, Peru, Uruguay, Ecuador, Costa Rica, and Japan.

The British Section includes exhibits dealing with the sea, the air, the Empire, scientific research, and tropical health—all of them of a spectacular kind.

The building is now complete, and in the centre court there has been installed a huge electric working model showing British shipping routes throughout the world. This map, with the geographical features shown in relief and with real water for the oceans, is about half the size of a lawn tennis court and has taken over six months to construct, at a cost of about £2,000.

It is designed on the lines of the huge illuminated map shown in the British Government Pavilion at Wembley, and its object is to convey some idea of Britain's importance as a commercial maritime nation.

At the suggestion of the Prince of Wales, who is patron of the Special Committee for the British Section, a "Pageant of the Red Ensign" is being organised by the master mariners in co-operation with leading shipping Companies.

A procession of scale-model ships, beginning with a Roman galley and ending with the present-day "Nelson," is being shown, and the Air Ministry is co-operating with the Department of Overseas Trade in arranging an exhibit showing the progress made in British aeronautics, in the form of scale-model aeroplanes from the earliest times to the present date, each model being shown as in flight.

The Department of Scientific and Industrial Research is to show an experimental tank in which models of projected ships are tested, and a special committee, presided over by Sir William Beveridge, is arranging a striking and novel exhibit to illustrate the part played by British scientists in fighting tropical diseases.

The East African Dependencies, the Gold Coast, and Nigeria and Malaya are exhibitors in the Colonial Court, and there is a separate composite exhibit for all the Dominions and Colonies in the Empire Court.

Among individual exhibitors in the British Section are the Port of London Authority (which celebrated its twenty-first anniversary in March), the Mersey Docks and Harbour Board, the Tyne Improvement Commissioners, Goole Harbour, Aire and Calder Navigation Company, Harland and Wolff's, the Travel Association of Great Britain, the London and North Eastern Railway, the London Midland and Scottish Railway, and the Southern Railway; and the shipping Companies include the White Star, Cunard, Union Castle, Furness Withy, Clan, and Elder Dempster lines.

The Department of Overseas Trade has arranged a striking series of dioramas and "cycloramas" to illustrate various phases of British history, and particularly maritime and colonial development, the artists engaged on this work including Professor Anning Bell, Mr. Spencer Pryse, Mr. Rurtherston, Mr. George Sherringham, Mr. T. Robinson, Mr. Johnston, and Mr. Warren Wilson.

In one alcove off the Centre Court there will be seen a view of the Thames in Elizabethan times from the house of Sir Thomas Gresham, founder of the original Royal Exchange, which was a copy of the Exchange at Antwerp.

In another alcove is reconstructed the view from the stern-sheets of Nelson's "Victory" at Trafalgar when the action was about to begin.

The landing at Botany Bay, Australia, from Cook's "Endeavour" is a third cyclorama, and others are of Drake's "Golden Hind" and the Pilgrim Fathers' "Mayflower," these views being of the ships themselves.

The dioramas illustrating Empire history include the Plymouth Brethren sighting America from the deck of "Mayflower," Cook's "East Indiaman," Cabot leaving Bristol, and Davis searching for the North-West Passage; while others show present-day scenes in various parts of the Empire, including Table Bay, Sydney Harbour, Vancouver, the Pool (Port of London), motor-boat racing in the Solent, and yacht racing at Cowes.

Another series of dioramas entitled "The Origin of the Race" will show graphically all the contributory strains in the British "make-up," beginning with Neolithic man digging out flints and continuing through the Bronze Age to the Roman, Saxon, Viking, Norman, and Fleming, and finally the Briton as he is to-day.

An official catalogue for the British Section will be published in English, French, and Flemish.

"We hope to fulfill the Prince's wish that the British Section will be worthy of Britain's unique position among the maritime nations," an official of the Department of Overseas Trade has said.

Lock Gate for Service at Flushing Completed.

The "De Maas" Shipbuilding Company of Slikkerveer, Holland, have just completed building a Lock-gate for service at the new Lock at Flushing, for the Ministry of Public Works, Holland. The dimensions of same are:—Length over all, 148-ft.; breadth, 17-ft.; depth, 41-ft.

"Ships that Pass in the—Fog."

How a ship equipped with the Marconi Direction Finder was able to enter port during thick weather, load its bunkers and leave port again while other vessels were held up by the fog is related in a recent report received from a ship's master.

The master writes that the wireless direction finder proved very useful in navigating his vessel round Cape Henry in dense fog and thus making port, the ship being bound for Norfolk, Virginia, for bunkers and thence to the Continent.

Sailing from Norfolk that night and passing Cape Henry outward it was observed that several vessels which were in the vicinity the same morning were still off Cape Henry in fog unable to make port.

"These vessels, I presume, had no direction finders," says the report, which concludes:—

"This steamer entered Chesapeake River on cross bearings from the Radio Beacon on Chesapeake Light vessel off Cape Henry, and therefore gained approximately 12 hours through being fitted with a wireless direction finder."

A more striking instance of the effectiveness of the Marconi Direction Finder as an assistance to the navigator it would be difficult to imagine.

Remarkable Results from Trials of Destroyers.

A number of the 8 destroyers of the "Acasta" Class have now completed sea trials and the results which have been obtained are such that they can be described as remarkable.

The design of the machinery in all ships which have completed trials is identical, and the results obtained are so uniform that those recorded on H.M.S. "Arrow," built by Messrs. Vickers-Armstrongs at Barrow, may be taken as representative of the class.

The speed obtained at the designed displacement was 36.7 knots, with a S.H.P. of 34,119.

No attempt was made to exceed the designed S.H.P. of 34,000 as the Admiralty trials are required to represent Service conditions, and forcing is not permitted.

The weight of the machinery is 465 tons and in considering the figures given above it should be borne in mind that the speed and powers given are those which were maintained over a 6-hour trial, and which could be maintained for a time which is limited only by the bunker capacity. One might assume in ships of this class, in order to obtain these speeds and powers, that a considerable sacrifice would have to be made in fuel economy. It will come as a surprise, therefore, to those familiar with destroyer conditions, to hear that the fuel oil consumption obtained is the remarkably low figure of .81-lbs. of oil per S.H.P. per hour.

Spectacular figures for speed and powers have been quoted from time to time as having been attained on the Continent, but it is thought that when endurance is taken into account the figures quoted above are exceptional.

Welding and Cutting in Structural Work.

Points to be Observed when using the Oxy-Acetylene Process.

WHEN intelligently used the oxy-acetylene welding process can be, as has already been pointed out in these columns, a great saver of time and money. There are, however, many points to be observed when employing the process.

In the first place, welding and cutting should not be carried on in the vicinity of readily combustible materials. If the work cannot be moved to a safe location, all combustible material should be moved a safe distance away, at least twenty feet. It is also important to survey the floor below for readily combustible material, as fires have resulted from sparks dropping through openings in the floor to a lower floor where protective measures had not been taken.

Wooden floors should always be protected with asbestos board or similar fireproof material as they are in many cases saturated with oil.

Before repair work involving use of oxy-acetylene equipment is undertaken, those in charge should make certain that the automatic sprinklers are not shut off for any reason. Records show a number of cases where fires, not necessarily caused by welding, which normally would have resulted in little or no damage assumed much larger proportions due to the fact that the sprinklers were disconnected or not in operation, and this fact was apparently not known to those using the blowpipes.

It seems hardly necessary to point out that welding and cutting should never be done in any locality where the use of open flames is prohibited or dangerous. Repairs on tanks, drums and containers of all types that may have been used for flammable liquids come under this same heading. Such containers should be thoroughly cleaned and steamed out and whenever possible should be filled with water before welding. In this connection it is interesting to note that there has recently been placed on the market a device known as a combustible gas indicator which will show whether or not certain combustible gases are present in unsafe concentrations in any suspected locality. This device should prove very helpful in determining just where open flame repairs can be safely made in localities where combustible gases may be present.

Developments during recent years have focussed attention on another phase of safety in the welding industry and that is the safe application of welding in the fabrication of products and structures where the strength of the structure is dependent upon the strength of the weld, and where failure might result in injury, loss of life and property damage.

During the early days of welding certain enthusiasts attempted application of welding where it should never have been tried and in some cases applied welding to shells of boilers and other pressure vessels without knowing anything about boiler design or metallurgy. Failures resulted and such failures were of course a setback to the industry. They resulted in some cases in rulings prohibiting the use of welding for certain applications.

Probably the day will come when various bodies that have regulatory powers will insist that welding on important work where the strength of the part or structure is dependent upon the strength of the weld be done only by persons who have proved their ability to make sound welds.

It is well to remember that indiscriminate repairs to boilers should not be sanctioned. The welding of flywheels should be restricted to those who have been properly instructed in such work.

During recent years, thorough study by engineers of the subject of safe welded construction in production work has resulted in the development of methods whereby this can be insured.

When first introduced, welding was used mainly for repair work and the details of handling each job were left almost entirely to the individual welders to whom the work was entrusted. Later, when welding began to be applied as a production process, it soon became evident that the determination of the various factors involved in the application of welding was not a matter that could be left to the individual welders but one that demanded managerial control. Hitherto successes in welding had seemed to be dependent mainly on the skill of the welder and experience had shown that there was wide variation in skill and ability. For certain products slight variations were not objectionable, but for important work, where the question of safety to the ultimate user was involved, it was essential that the management have some way of making certain that the work was always of uniform high quality.

The various factors involved in production welding were made the subject of careful engineering investigation, the first study being made in 1924 in connection with the installation of long oxwelded pipe lines for carrying gas and oil at high pressures.

As a result of these studies it was found that the success of any welding application could be assured if proper attention were paid to six factors. Determination of the details regarding these six factors for any given type of work forms a Procedure Control or master guide from which specifications for any specific job of that type may be written. The six factors of a Procedure Control are:—

(A) Check of the welders—To see that only competent operators are used. Further, that they prove their ability by successfully passing qualification tests, preferably tests simulating the particular operation.

It is advisable to test welders on all work even where it is not important so that they will be prepared to do important work later as the occasion may arise. Periodic testing of welders is also advisable, for as an operator gains experience he develops his own ideas and may unconsciously change his methods without realizing that he is perhaps deviating from best practice. Periodic testing will make certain that the welder's skill is maintained and that his work is of uniformly high quality.

(B) Selection and Inspection of Material—To make certain that only material suitable for welding is used and the proper welding rod is selected.

(C) Design and layout of welded joint—To ensure that the joint is correctly designed for welding.

(D) Preparation for Welding—To see that preparation and assembly are the best for welding.

(E) Organization and Welding Technique—To see that the welding is carried on in the most satisfactory and economical manner and that the welding itsef is correctly done.

(F) Inspection and Test—To check whether the above items of the welding procedure have been followed and to see that proper welding results. The test of the completed work is an additional insurance that the welding installation will give satisfactory service.

Application of procedure control to the production of oxwelded pressure vessels has resulted in the development of suitable methods for the construction of several hundred vessels ranging in diameter from 4 to 7½-ft. up to 90-ft. in length and with operating pressures as high as 300-lb. per sq. in.

A brief discussion of each of the factors of procedure control as applied to the production of oxwelded pressure vessels will serve to give a better understanding of just what is meant by procedure control and how it is actually used.

(A) Check of Welder's ability.

Experience:—Early in the work on pressure vessels it was found that mere consideration of a welder's previous experience was an unsatisfactory and unreliable indication of his ability. Even experience on heavy plate or tank work was not conclusive, as was shown when operators were required to weld test plates from which standard tensile coupons were cut and pulled. This led to the adoption of a requirement that each operator should submit satisfactory tensile test results before being allowed to weld on pressure vessels. Even after acceptance, additional test pieces are required at intervals to ensure maintenance of the same high quality of workmanship.

Results obtained over a period of years show conclusively that this plan places the human factor under absolute control and thus eliminates an element of doubt that tended to exist in the earlier days of welding.

Qualification Test:—At the present time, specifications for pressure vessels made under procedure control require each welder to submit test specimens, unless he has successfully passed a test on similar work within six months. Whenever possible, operators considered for test should have had experience on heavy plate, preferably on welded tank construction. If the operator has not had considerable experience in making ripple welds in heavy plate by the "back hand" method as recommended for longitudinal and girth seams, he is allowed to practise until he has become thoroughly proficient before submitting test specimens. This is decided by the foreman or inspector.

Test specimens are made by welding together two plates, each 9 by 12-in., the 12-in. edges being bevelled for single or double vee according to type used. Plates are of at least the same thickness as actual work. Welds should be made by the back hand method. For double-vee welds, the weld reinforcement should be at least 15 per cent. of the plate thickness on each side. Single vee welds should be reinforced not less than 25 per cent. of the plate thickness.

Completed test pieces are sent to an approved laboratory for test unless testing facilities are available at the job. Here visual inspection first eliminates any that show excessive rein-

Welding and Cutting in Structural Work—continued.

forcement or unevenness. From each test specimen, five standard A.S.T.M. coupons are cut and pulled in the tensile testing machine, the weld reinforcement being removed from three coupons before test. Coupons must show an average ultimate strength of 52,000-lb. per sq. in., with a minimum of 50,000-lb. per sq. in. for any coupons that may fracture in the weld, and a minimum of 48,000-lb. per sq. in. for coupons that break in the plate. All weld fractures, if any occur, must show freedom from appreciable defects, or the weld is rejected.

(B) Selection of material.

Plate:—Experience has shown that steel plate for welding should be specified on the basis of chemical composition, tensile strength and quality.

Low carbon steel plate is preferable for welding. It is generally agreed that a carbon content of not over 0.20 per cent. should be specified up to $\frac{3}{4}$-in. plate, and 0.22 carbon for plate that is more than $\frac{3}{4}$-in. in thickness.

Steel plate containing 0.20 per cent. carbon has a tensile strength range of from 48,000 to 60,000-lb. per sq. in. and this has been found most suitable for pressure vessel work.

Steel plate is made in four usual qualities: firebox, flange, ship and tank. Firebox is the highest quality and is consequently specified for all pressure vessel work. In addition, the steel mill is informed that the plate is to be oxwelded so that special care will be taken in selecting the material that is shipped to fill the order.

Welding Rod: Since a pressure vessel is a combination of plate and weld, both must be good in order to ensure a high grade product. Obviously the weld metal should be at least as strong as the plate. Practically, it is desirable to have weld metal stronger than the plate, thus promoting an added factor of safety to ensure against possible failure to deposit weld metal perfectly at all points. High test welding rod will give this higher strength weld metal and is consequently recommended for pressure vessel work. It also fulfills certain other necessary qualifications which are important in selecting welding rod for all important work.

These are: (1) Ductility of weld metal; (2) Ease of manipulation of welding puddle; (3) Freedom from tendency to burn or to form laps or cold shuts; (4) Speed of deposition.

(C) Design.

Engineering investigations made in connection with the development of oxwelded pressure vessels has contributed greatly to our knowledge of correct design for such vessels. Previous mechanical-type joints could not be satisfactorily tested at hydrostatic pressures exceeding about $1\frac{1}{2}$ times the working pressure, because of the serious leakage at the joints. As a result it was impossible to determine experimentally the exact behaviour of vessels at high pressures and designs had to be based on more or less theoretical considerations.

The oxwelded joint, however, imposes no such limitation on pressure testing. Hydrostatic pressure can be carried on up to the point of failure. Strain gauge measurements made while the tank is under pressure indicate points of excessive stress and thus show exactly where the weak spots in the design are. Such measurements made on a large vessel fabricated according to previously accepted principles of design showed quite conclusively that there were defects at many points.

Zones of unexpected weakness were found in several important points, notably at the knuckle of the dished heads, at the manhole opening, and at nozzles. It is interesting to note that oxwelding not only disclosed these weak points in design, but also provided the means of correcting them. Designs were modified in accordance with the indications of the tests, and the new designs were then submitted to strain gauge measurements while under hydrostatic pressure.

As a result, it is possible to-day to build a pressure vessel of known uniform strength at every joint. Under pressure, such a vessel acts as a single unit throughout; there are no concentrations of stress at any point. Oxy-acetylene welding has thus made a most important contribution to safety in pressure vessel construction.

Design of shell:—Shell thickness is determined by the allowable design fibre stress in accordance with the usual formula:

$$t = \frac{PD}{2S}, \text{ where}$$

t = thickness of shell in inches,
P = working pressure in lb. per sq. in.,
D = internal diameter of shell in inches,
S = design fibre stress in lb. per sq. in.

At the beginning of the investigations on oxwelded pressure vessels, a conservative design fibre stress could be employed safely and for some time a design fibre stress of 9,000-lb. per sq. in. has been used for unfired vessels.

This figure still gives a factor of safety of over 5 based on ultimate strength, since welders are required to submit qualification tests of 50,000-lb. per sq. in. for acceptance.

Head design:—Strain gauge measurements referred to above showed that when the standard dished head (having a crown dish equal to the diameter of the shell and a small knuckle radius) is subjected to internal pressure, serious stresses are shown to develop at the knuckle.

These stresses at the knuckle are entirely out of proportion to those in the shell and are of sufficient magnitude to give considerable concern even where shell design is based on a factor of safety of 5 or more.

Investigation showed that the correct design for eliminating high local stress is an ellipsoid with a ratio of two to one between major and minor axes. A close approximation may be obtained by the use of two radii by means of which heads of the new type can be constructed at little additional cost. The maximum stress at any point in this new type head does not exceed that on which the design of the shell is based.

(D) Preparation for welding.

This includes instructions for bevelling and rolling plates and lining up seams and outlets.

(E) Welding technique.

This includes detailed instructions for the actual welding operations involved.

(F) Inspection and test.

Inspection:—A properly qualified shop inspector should be selected to see that the various details of procedure control specifications are followed constantly throughout the work.

Test of completed vessels:—Present practice in testing oxwelded pressure vessels requires a hammer test while under hydrostatic pressure of twice the designed working pressure. The weight of the hammer in pounds is equal to the shell thickness in tenths of an inch and the blows must be struck at 6-in. intervals on both sides of the weld for the full length of the seam.

Following the hammer test, the hydrostatic pressure is raised to three times the designed working pressure.

Procedure control in other fields.

A brief summary will serve to indicate the extent to which procedure control welding is being done in other fields.

Pipe lines for oil and gas:—As the procedure control idea developed in the pipe line field it is naturally widely used. The recent report of the sub-committee on pipe joints of the American Gas Association includes complete procedure controls for oxy-acetylene welded steel joints and fittings.

Power and industrial piping:—In the fields of power piping and piping for industrial purposes, application of procedure control has resulted in many improvements in design of headers, branches, bends, reducers and anchorages. Oxy-acetylene welded construction is now being employed for power piping operating 400-lb. per sq. in. pressure and 750 deg. F. and for hydraulic pressure piping operating at 3,500-lb. per sq. in. Procedure control is reflected in the Code for Welding of Steam Piping, State of Michigan, and in the corresponding Code for Ohio. It is also being employed by the Welding Sub-Committee of the Standardization Committee of the Heating and Piping Contractors National Association.

Aircraft:—The majority of American airplanes have fuselages fabricated from milk steel or chrome molybdenum steel tubing with oxy-acetylene welded joints. Procedure control has been of great assistance to individual manufacturers, particularly in establishing methods for training and qualifying operators, in selecting proper materials and in determining the most efficient joint design. When the Bureau of Standards, at the request of the Aeronautics Branch of the Department of Commerce, undertook a fundamental investigation of the strength of typical welds as found in aircraft structures, the American Bureau of Welding was called upon to supply a procedure control under which to make the welds for these important tests.

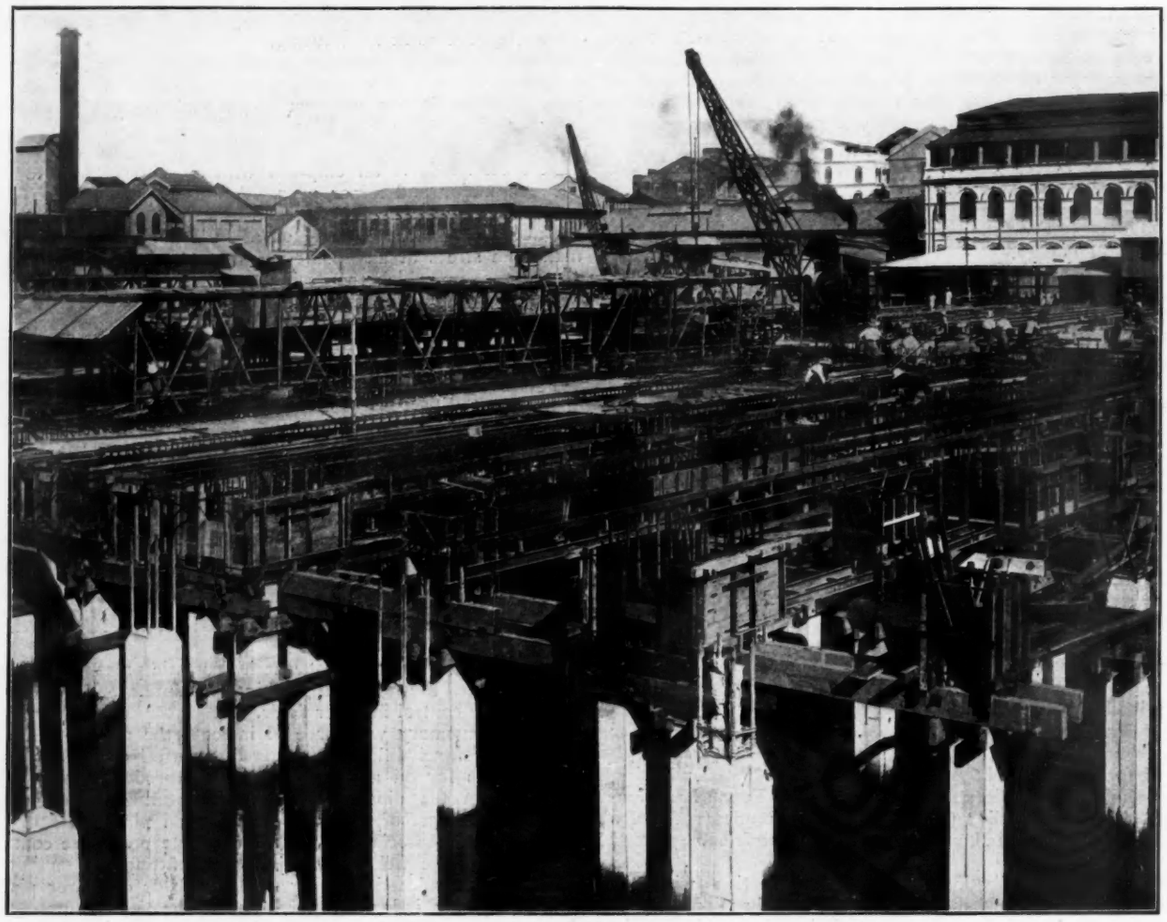
Structural welding:—In the structural field, the feasibility of welding is being demonstrated by numerous applications in major building and machinery frames. A number of full scale tests have shown that welded structural assemblies properly designed will develop the strength prescribed. The entire subject is being studied from the point of view of procedure control by the Structural Welding Committee of the American Bureau of Welding. Procedure control is also reflected in the Code for Fusion Welding and Gas Cutting in Building Construction developed by the Building Code Committee of the American Welding Society.

From the foregoing discussion it is evident that the idea of procedure control is playing a most important part in ensuring the production of safe welded products and structures.

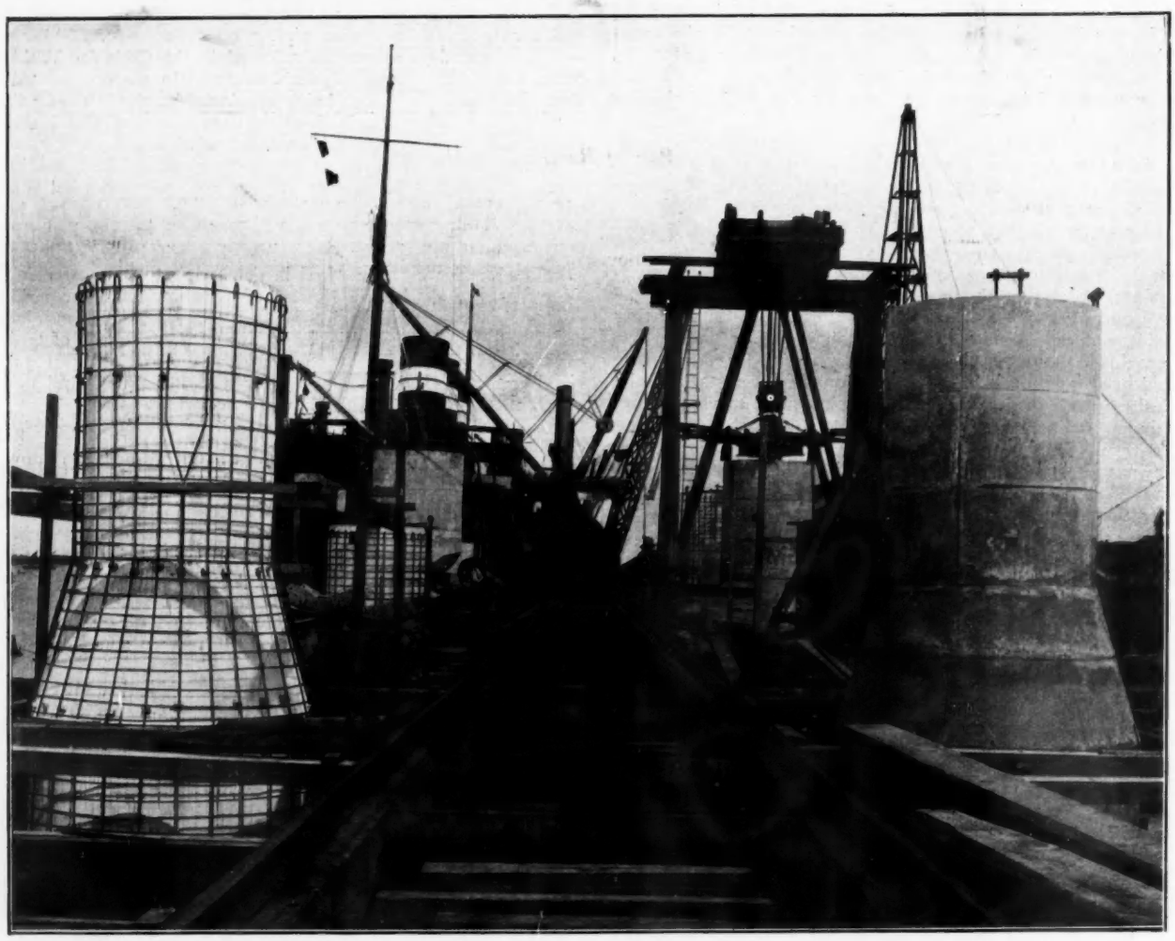
Regulation of Elbe Inland Waterway.

As a result of the pressure brought to bear upon the authorities by the various bodies interested in traffic on the Upper Elbe a motion is being introduced in the Reichstag with a view to securing consideration for the regulation of the depth in the Upper Elbe channel when the next waterway construction programme is introduced.

The Port of Rangoon.



Section of Deck Shuttering in Place.

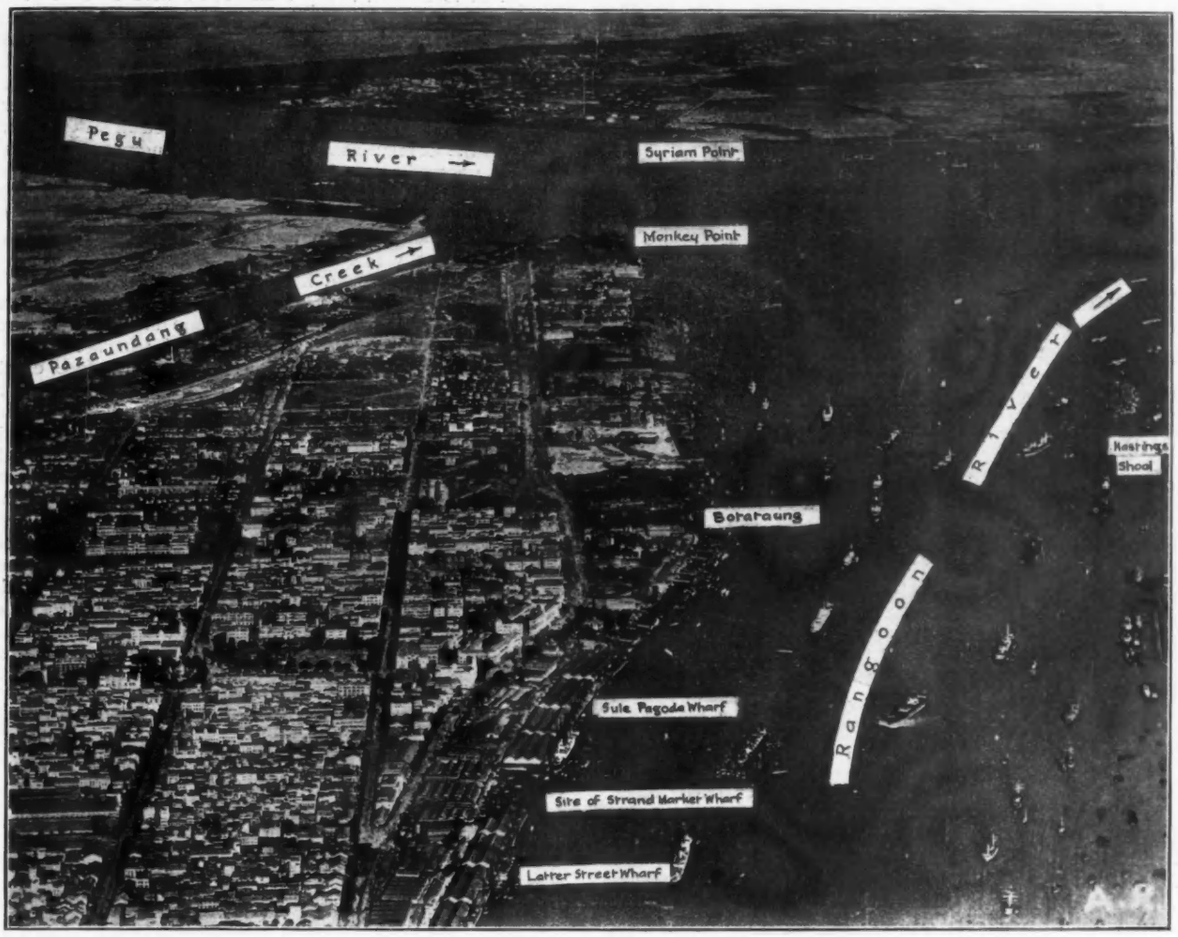


Lowering Bottom Section of Cylinder on to River Bed by means of Electric Crab Winch.

Port of Rangoon.

Construction of New Wharf for Ocean Going Vessels.

(We have been enabled, by the Courtesy of the Chairman of the Commissioners for the Port of Rangoon, to obtain the information for this account of the construction by the Commissioners' Engineering Department of an important New Wharf, including various features of interest).



Photo] *Port of Rangoon.* [Air Survey Co., Ltd.

General Description.

RANGOON is situated on the left bank of the Rangoon River about 25 miles from the sea and just above its confluence with the Pazundaung Creek and Pegu River. The main river is also the most easterly mouth of the Irrawaddy with which it is connected by several large channels. It is, indeed, chiefly to this connection that Rangoon owes its existence as a great city and port, for with over 900 miles of navigable waters, the Irrawaddy has almost provided the sole traffic route for a great part of Burma. A great part of the inland traffic to and from the port is still water-borne by the Irrawaddy Flotilla Company's boats, by rafting of timber and by native boats. The Inner Harbour has a maximum tidal range of about 22-ft. and being at times supplied with an immense volume of upland water, while at other times it is predominantly tidal, provides many difficult problems both of conservancy and engineering.

The Hastings Shoal just below Rangoon is an obstacle to navigation, and adequate access to the Inner Harbour, as the river opposite the town itself is termed, can only be maintained by dredging in the Monkey Point Channel, by which means a depth of 20-ft. at low water is secured. To a considerable extent ocean-going steamers take on their cargo from lighters at moorings in the Inner Harbour, but some of the loading and a great part of discharge of cargo is done at the wharves. The principal wharves for ocean vessels are the Latter Street and Sule Pagoda Wharves.

The Outer Harbour includes the mouths of the Pazundaung and Pegu Rivers and the main river below the Hastings Shoal. The new Salt Import Depot is on the Pazundaung, the Burma Oil Company's refineries and wharves on the left bank of the Pegu at Syriam, the Indo-Burma Petroleum on the main river at Seikkyi and below this is the Admiralty Fuel Depot. The Commissioners have transferred their depot for coal and mooring plant across the river to the right bank known there as the King's Bank, and there are further anchorages in this part of the harbour for ocean-going steamers, where the larger vessels often complete loading in order to be independent of the tide.

Exports and Imports.

Rangoon has a population of about 350,000; it is the capital and by far the largest town in the Province of Burma, which embraces 230,000 square miles and has an increasing population of at present about 13,250,000. The Port of Rangoon now deals with over 90 per cent. of the total overseas trade of the Province and is already the third largest port in the Indian Empire. The comparative figures for 1913 and 1928 show the rapidity of its growth in recent years:

	1913 Tons.		1928 Tons.
Seaborne Trade	4,557,401	...	5,558,831
Tonnage entering the Port	2,946,774	...	4,212,762
	1913 Rupees.		1928 Rupees.
Port Revenue	51,84,773=£388,800		81,77,287=£613,300

The chief exports are rice, bran and pollard, timber, lead and zinc, oilcake, hides, etc.; the grain, timber, oilcake and hides being for the most part dealt with by lighters, the percentage passing directly over the Commissioners' wharves being about 30 per cent. of the total tonnage of 3¾ millions. The exports use the wharves to a value of Rs.11 crores or over £8,500,000. There is also a large export of oil and its by-products from the Burma Oil Company and the Indo-Burma Petroleum Company's refineries at Syriam and Seikkyi. The total in 1928-29 was nearly 700,000 tons, none of which was handled by the Port Authorities. The chief imports are cotton and silk piece goods, mineral oils, coal and coke, building materials, salt, of which 60 per cent. pass through the Commissioners' hands for

The Port of Rangoon—continued.

distribution. Both in regard to imports and exports the tendency is for an increasing proportion to be dealt with by the Port Authorities.

Mr. J. A. Cherry, C.I.E., Chairman.

A feature of Rangoon is the heavy passenger traffic, largely accounted for by the yearly immigration and emigration of coolie labour from India. In 1928-29 the total of arrivals and departures was 678,300. Apart from this over a million passengers are carried annually by the Irrawaddy Flotilla Company's steamers, at least another million use the regular cross-river ferries in the Harbour and a very large number use the 4,000 sampans or native boats which are licensed to ferry passengers across stream or to steamers anchored in the river. The Commissioners are required, under the provisions of their Act, to maintain a sufficient number of landing places within the Port for the landing and embarking of all these passengers.

At the present time there are 2,823-ft. of wharfage for use of ocean-going steamers. Coastal and local eastern traffic is chiefly accommodated at the new Botataung and other jetties. The existing wharves are overtaxed by the great increase in traffic and are constructionally to some extent unsuited to modern requirements. In particular the heavy mineral traffic from the Burma Corporation has demonstrated that the character of construction justified when the wharves were built is no longer adequate. The Sule Pagoda Wharf, which was constructed in 1904-08 with screw piles, is already unfortunately showing signs of the strain.

Port Developments to Cost £2,000,000.

A comprehensive programme of Port development was adopted in 1925, for which Mr. J. A. Cherry, C.I.E., the present Chairman, who was appointed in 1920, was primarily responsible, with the assistance of Mr. E.C.Niven, M.Inst.C.E., the present Chief Engineer, who (after a long previous service with the Commissioners) was appointed at the same time. This programme was designed to cover ten years and involved an estimated expenditure of about £2,000,000. The more important proposals were the provision of additional 1,172-ft. of wharfage for ocean-going steamers, making a total of 3,995-ft.; the development of the Lanmadaw bank upstream for inland water transport, local and railway traffic; the development of Botataung for the Irrawaddy Flotilla Company's main river traffic and for coastal steamers; the provision of the new Salt Depot at Pazundaung; and certain reclamation and development works on the Pegu River. Much of this proposed work that has been carried out presents no feature of an unusual nature. The most vital part, however, was the new wharfage, the first portion of which, namely, the new Strand Market Wharf, between the Latter Street and Sule Pagoda wharves, is now nearing completion and is the subject of the present article.

Design of the New Wharf.

The construction of the Strand Market Wharf differed from previous work carried out by the Commissioners in that it was of ferro-concrete of a type and design new to Burma. Experience had shown that a structure of greater strength and permanence than the existing wharves was demanded by modern requirements. It was therefore decided after considerable investigation to build a heavy reinforced concrete wharf of the most up-to-date design. As it was not found feasible to have the work carried out by contract, the Commissioners decided to do it departmentally. Faced with the difficulty of finding the necessary staff trained in modern reinforced concrete construction, they established a separate branch of the Chief Engineer's department and enlisted a special staff selected in England and sent out by the Commissioners' Consulting Engineers, the latter being also generally associated with the Commissioners' Chief Engineer in the supervision of the work, in order to prevent the Chief Engineer's time and activities being unduly monopolised by the construction work to the detriment of the many other important matters which require his attention.

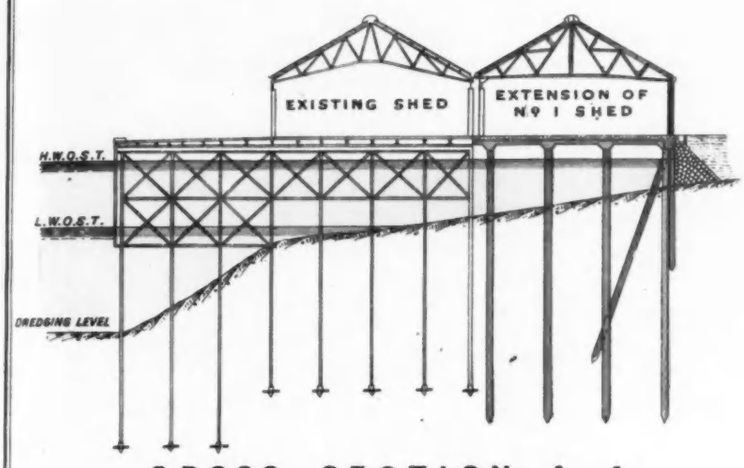
The new Wharf is 509-ft. long and 40-ft. wide to the face of the Transit Shed. It is designed to carry two lines of railway track of metre gauge (the standard gauge in Burma) as well as the front crane rail for the semi-portal wharf cranes. A two-storey Transit Shed will lie parallel to the face of the wharf, with a length of 420-ft. and a width of 150-ft. Road and rail access will be provided at the back of the Transit Shed for distribution of goods, and access from the City to the wharf will be possible at each end of the Transit Shed. The datum used for levels in the Port of Rangoon is 100-ft. below approximate mean water level. Low water of ordinary spring tides is at elevation 91.60, and high water at elevation 108.90, the mean range of tide being therefore about 17-ft. The deck of the wharf is required to be at elevation 114, approximately 5-ft. above high water and provision has been made for dredging in the first instance to elevation 65, and later to elevation 60. The front of the wharf will therefore ultimately have a height above the river bed of 54-ft. and in view of this great height and the size of vessels to be accommodated at the wharf,

Mr. E. C. Niven, M.Inst.C.E., Chief Engineer.

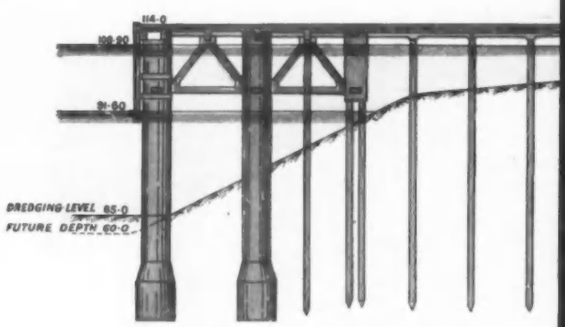
massive construction was necessary. It was accordingly decided to support the wharf on two rows of reinforced concrete cylinders, having shafts 7-ft. diameter and enlarged bases

PORT OF RANGOON.

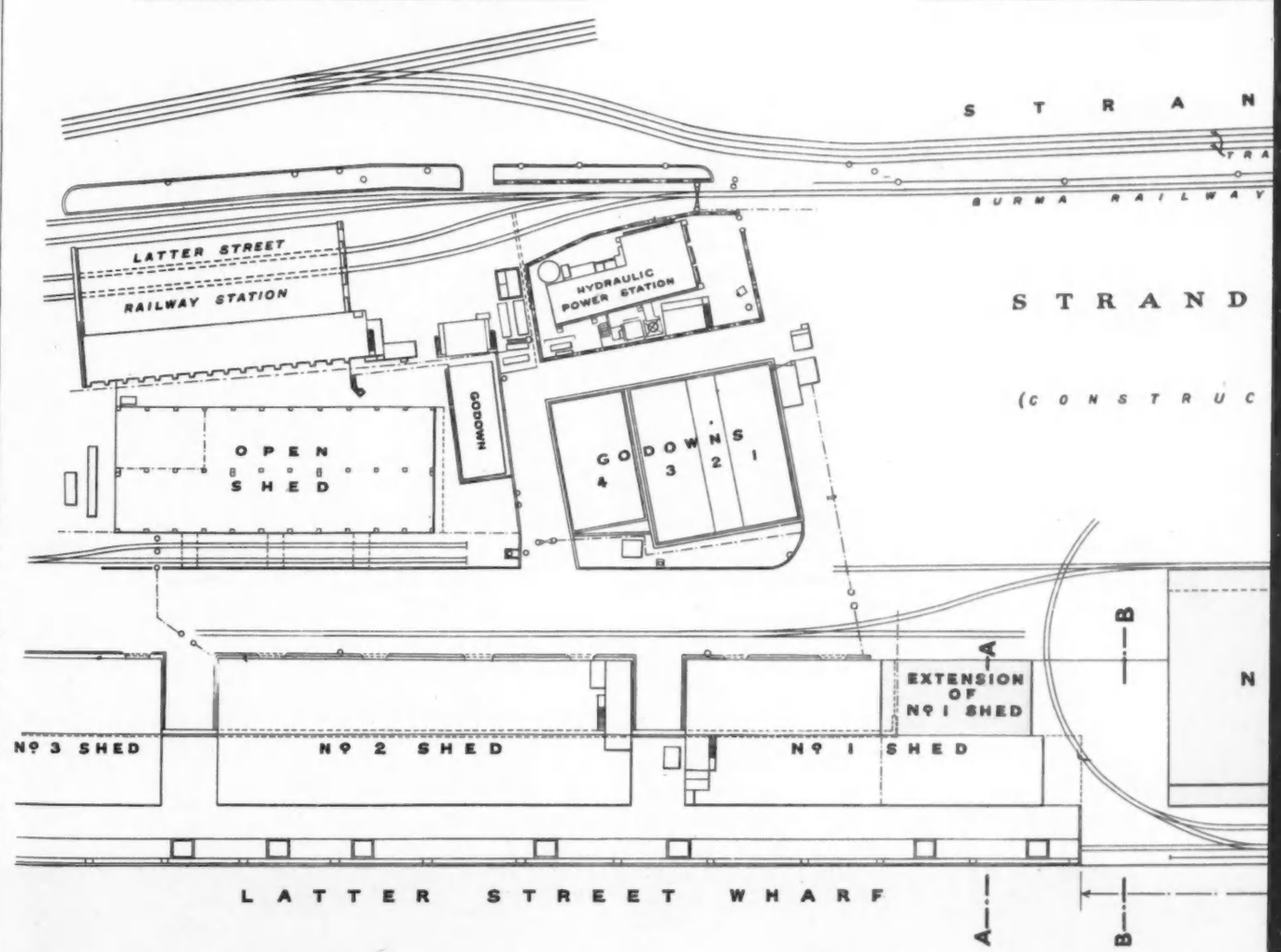
STRAND MARKET WHARF.



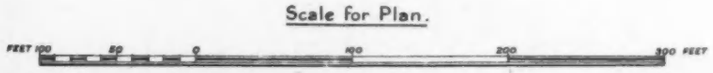
CROSS SECTION A.A.



CROSS SECTION



Scale for Plan.



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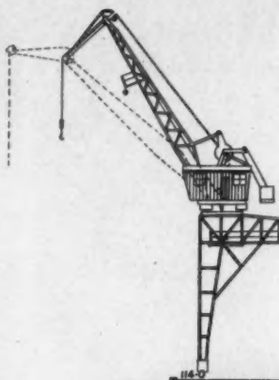
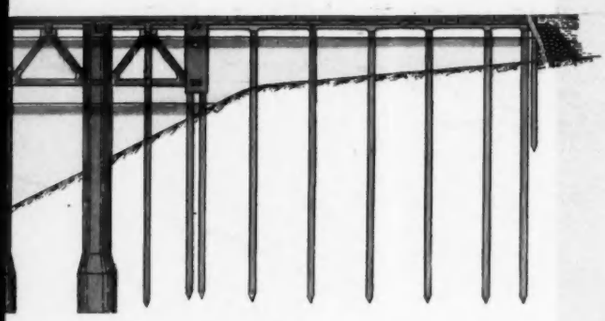
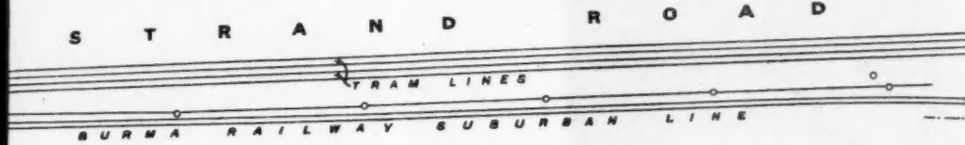




CROSS SECTION B.B.



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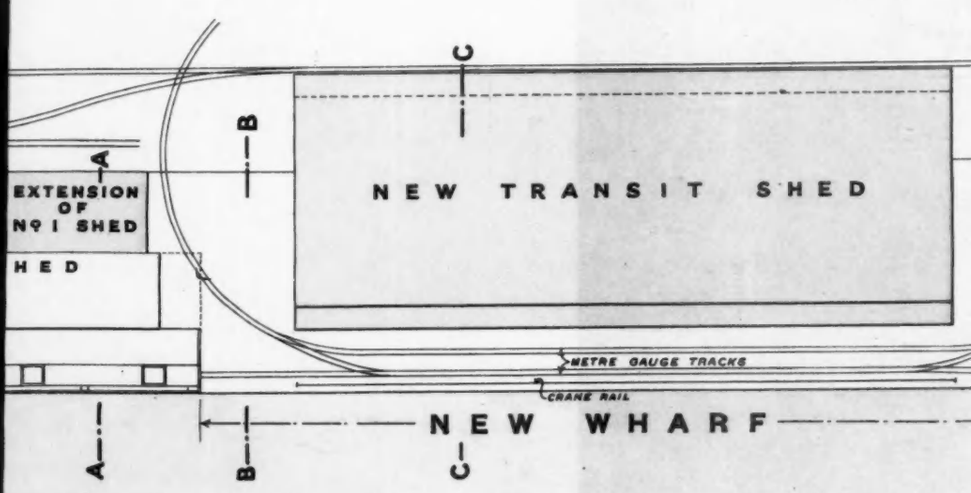

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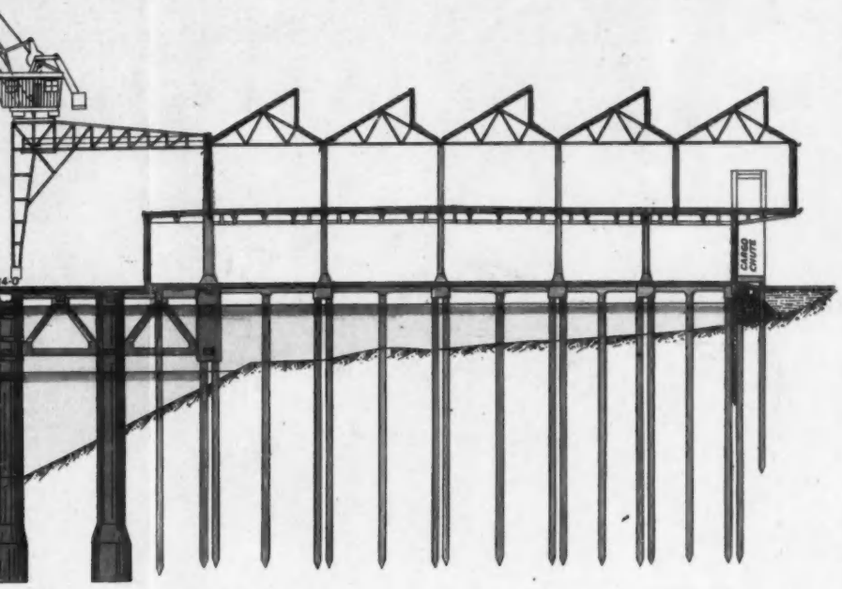
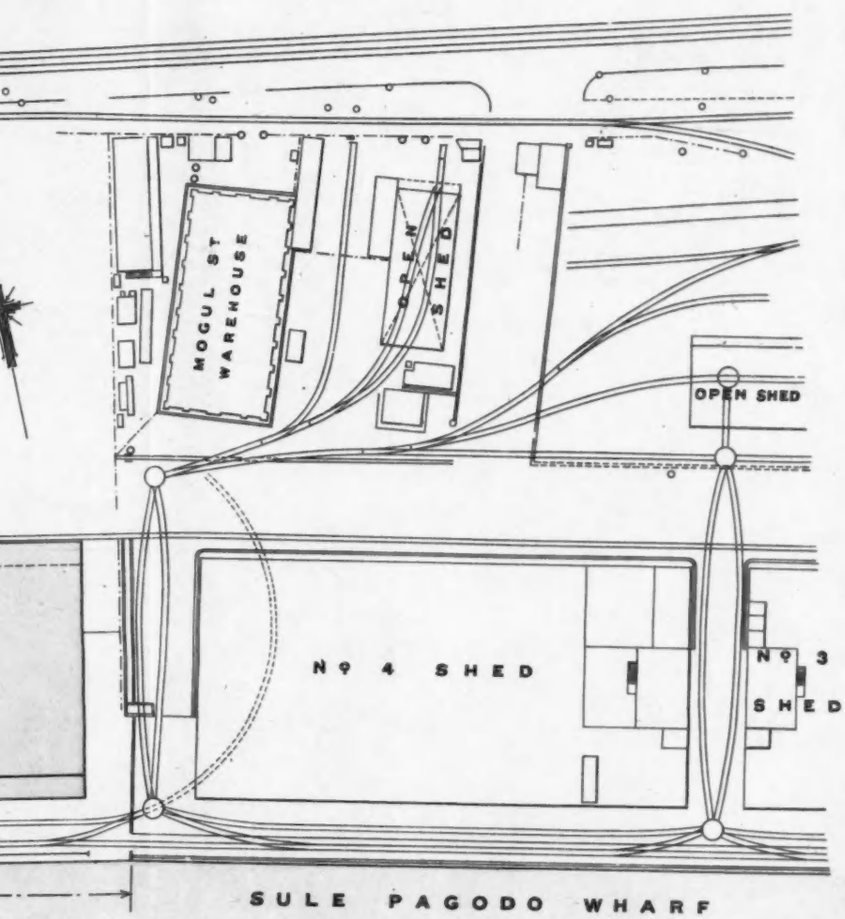
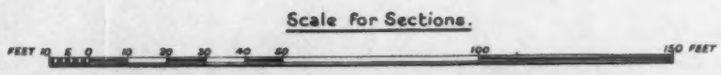


CROSS SECTION C.C.

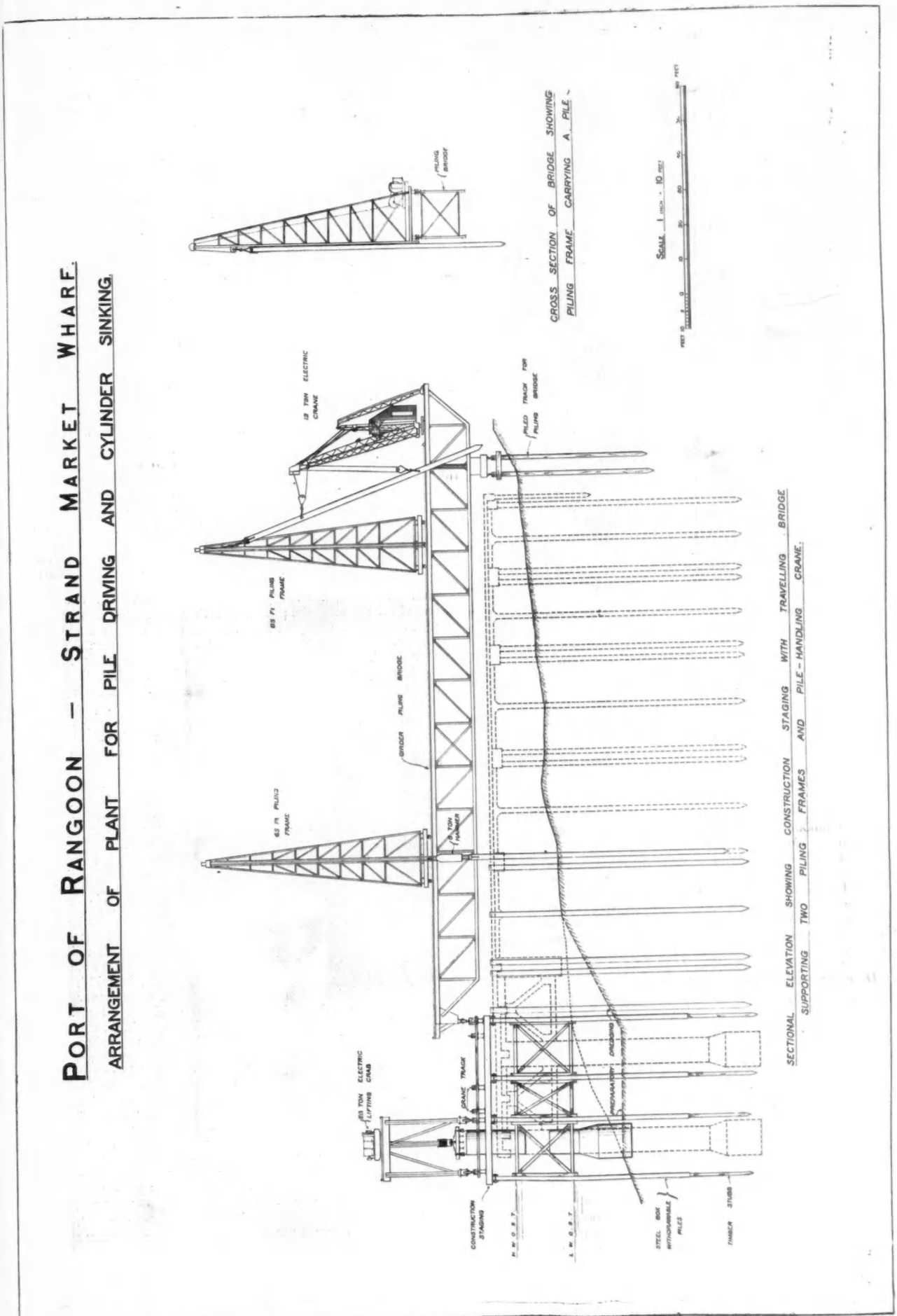


SULE PAGODO WHARF

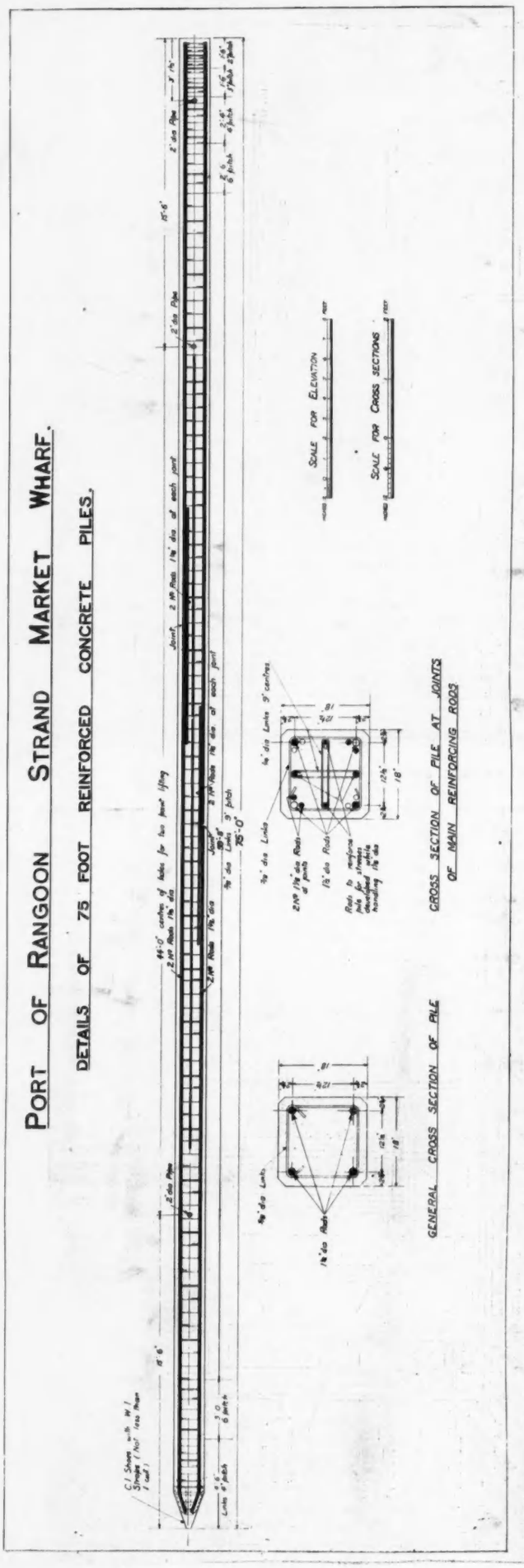
Scale for Sections.



The Port of Rangoon.


PORT OF RANGOON — STRAND MARKET WHARF.
ARRANGEMENT OF PLANT FOR PILE DRIVING AND CYLINDER SINKING.
CROSS SECTION OF BRIDGE SHOWING PILING FRAME CARRYING A PILE.
SCALE 1 INCH = 10 FEET
PILING BRIDGE
12 TON ELECTRIC CRANE
PILED TRACK FOR PILING BRIDGE
65 Ft PILING FRAME
GIRDER PILING BRIDGE
65 Ft PILING FRAME
8 TON TRAVELLER
SECTIONAL ELEVATION SHOWING CONSTRUCTION STAGING WITH TRAVELLING BRIDGE SUPPORTING TWO PILING FRAMES AND PILE-HANDLING CRANE.
25 TON ELECTRIC CRAB 1 LIFTING
CRANE TRACK
PREPARATORY DREDGING
CONSTRUCTION STAGING
R.W.O.S.T.
L.W.O.S.T.
STEEL BOX WITHDRAWABLE PILES
TIMBER STUBS

The Port of Rangoon—continued.

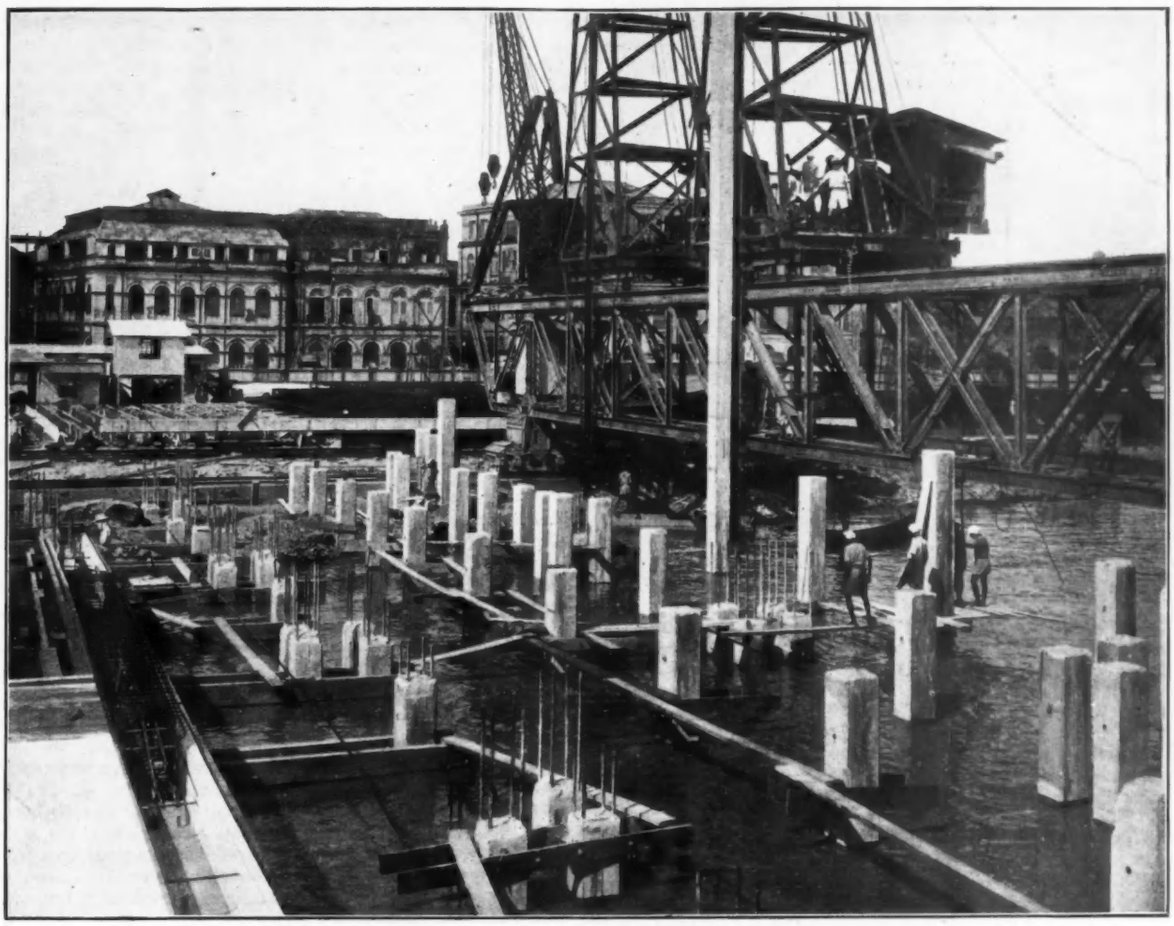

PORT OF RANGOON STRAND MARKET WHARF.
DETAILS OF 75 FOOT REINFORCED CONCRETE PILES.
SCALE FOR ELEVATION
SCALE FOR CROSS SECTIONS
GENERAL CROSS SECTION OF PILE
CROSS SECTION OF PILE AT JOINTS OF MAIN REINFORCING RODS

of 10-ft. diameter, the cylinders being spaced at 24-ft. 9-in. centres in the longitudinal direction, and 25-ft. 6-in. centres in the transverse direction. Ties and braces of massive precast reinforced concrete were arranged to connect the cylinders above low water level, so that " in situ " concrete work in the tideway would be reduced to a minimum. The cylinders were formed in three sections below the level of the bracings. The lower section, having a length of 24-ft. with a thickness of 6-ins. in the enlarged base and 5-ins. in the shaft, was designed to stand above low water level when set on the prepared bed formed by preliminary dredging down to elevation 77.5-ft. Before any sinking was done, a further shaft section, 17-ft. 6-ins. long, was superimposed, the connection being made by interlocking bolts and a grooved mortar joint. The cylinders were then sunk by dredging from the inside, and went down readily without the use of kentledge, being built up as required by the addition of the third section. When the shoe of the cylinder reached the designed level the bottom was cleaned and trimmed inside, and a plug of rich concrete was deposited under water through a tube to seal the base. The interior was then pumped out, a circular cage of reinforcement was set in position and the shaft was filled up with concrete. When a sufficient number of cylinders had been completed to the underside of the bracings, the precast frames and horizontal braces were set in position. The topmost cylinder sections, which were formed with recesses to pass over the ends of the braces were next set up and the cylinders then concreted up to the deck.

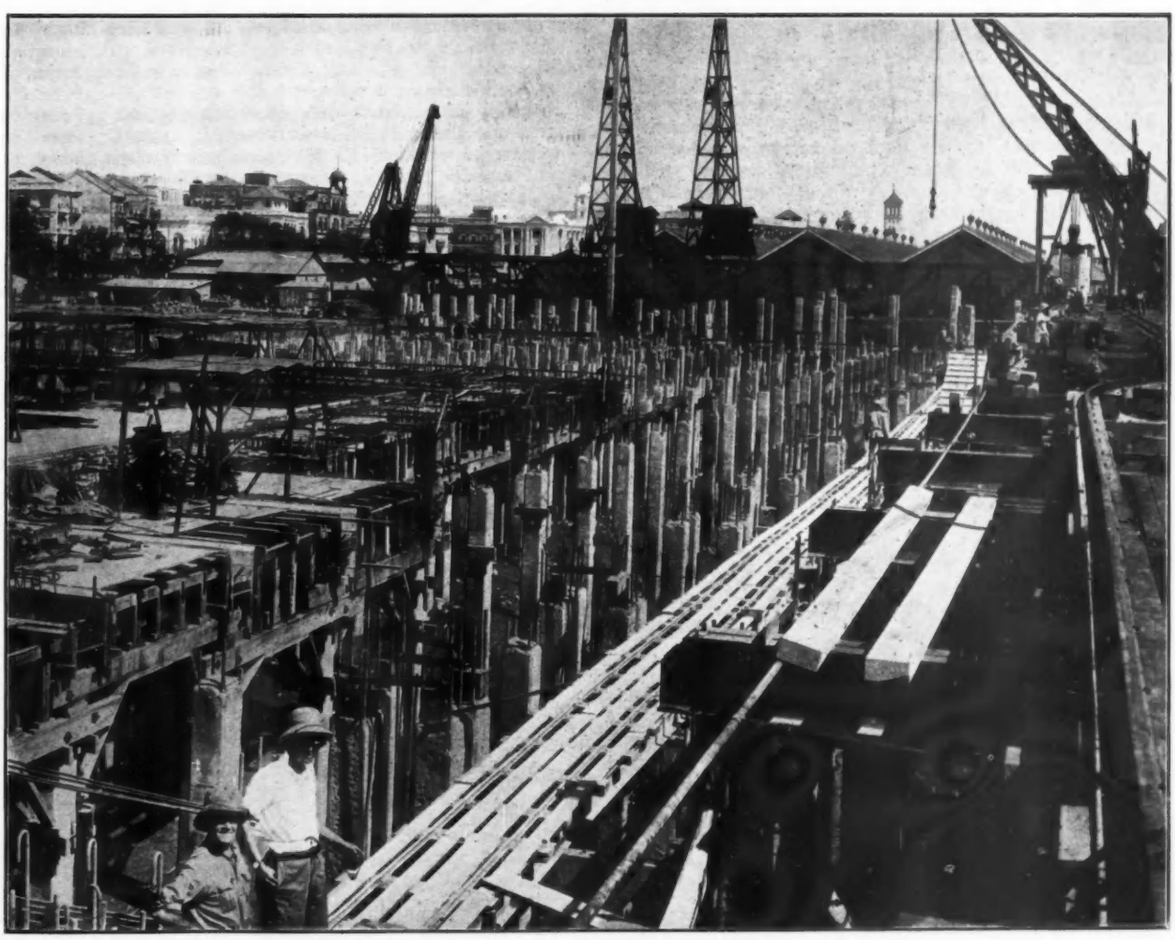
The deck is formed of ordinary beam and slab construction laid on shuttering in the usual manner. The principal beams run on the longitudinal direction of the wharf, and the transverse "A" frames are arranged to support two of the main beams, the others being supported directly on the cylinders. Under the Transit Shed the existing bed of the river is at a high level, generally above low water mark, enabling piles to be driven to support the ground floor without involving too great an unsupported length. Accordingly precast reinforced concrete piles were here driven down to a stratum of adequate bearing power, and finishing at ground floor level. No bracings were required below high water, which was an important consideration as avoiding tidal deposition of concrete. An exception occurs in the case of the piles supporting the crane girder, which are arranged in groups of four encased in a square block of concrete, the casing commencing at a point a little above low water level. These blocks are braced to the back row of cylinders by precast "A" frames, which are identical with those connecting the two rows of cylinders. The deck of the wharf is designed generally for a load of 6-cwts. per square foot, while a strip next to the Transit Shed, which may be used for temporary storage of lead, is designed for 7-cwts. per square foot. The maximum railway and crane loading is also taken into account in designing the main beams. The floors of the Transit Shed are designed to carry a load of 4-cwts. per square foot. The piles under the Transit Shed are 75-ft. long, and were made 18-ins. square with four main reinforcing rods at the corners, 1½-ins. diameter, and four other rods 40-ft. long by 1⅛-ins. diameter in the central portion of the pile in the middle of each side. The piles weigh 12 tons each and their design was controlled to a large extent by consideration of the forces induced in transporting and lifting them.

The transit shed is designed to be a steel-framed building with brick panelled walls. Each column is supported at the ground floor level on a reinforced concrete block formed over a group of four concrete piles. The columns are set uniformly at intervals of 24-ft. 9-in. in the longitudinal direction and form rectangular bays varying from 15-ft. to 30-ft. in width in the transverse direction in the lower storey. In the upper storey the transverse spacing of the columns is uniformly 30-ft. The construction of the upper floor is simple, with main plate girders running in rows transversely between the columns and supporting 24-in. by 7½-in. longitudinal floor beams spaced at 7-ft. 6-in. centres. The floor beams are cased in concrete and support a reinforced concrete slab floor. The roof is formed in five bays of 30-ft. span with the slopes covered with heavy corrugated asbestos sheeting. A strip of vertical glazing and a row of vertical louvres run the whole length of each bay. A 15-ft. bay of the lower storey projects in front of the upper storey and its roof is designed to form a loading platform for the upper floor, while on the landward side the upper storey projects 15-ft. to form a shelter for the ground floor despatching platforms. Three sloping cargo chutes lined with smooth metal plating commence at the upper floor within this projecting bay and lead down to loading and despatching platforms outside the north wall of the lower storey. A similar cargo chute is arranged at each end of the shed, and three cargo hoists will be installed near the landward side of the shed for interchange of goods between the two floors. The area of each floor is about 62,000 sq. ft. and the total storage capacity of the shed is estimated at 19,000 tons. In addition to the

The Port of Rangoon.

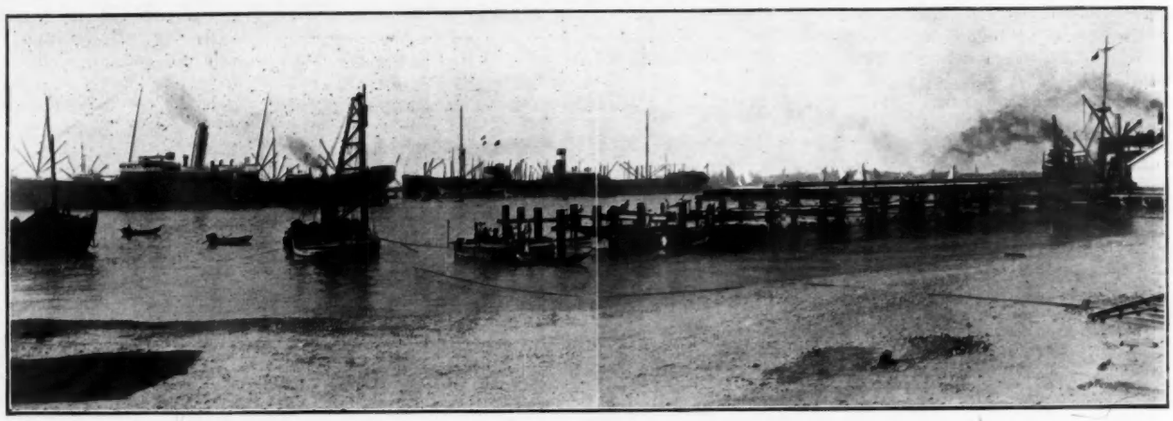


Pile Driving in Operation.



The Pile Driving Flying Bridge—a Pile being Pitched. Sule Pagoda Wharf in the Background.

The Port of Rangoon—continued.



Site of New Wharf: Temporary Steel Pile Staging for Construction of Cylinders and Support for River End of Piling Bridge.

main transit shed a single storey extension of 106-ft. by 50-ft. is to be added to the existing shed No. 1 on the Latter Street Wharf, giving an additional storage area of 5,000 sq. ft. This extension will be supported on a reinforced concrete deck carried on concrete piles.

Six level luffing Babcock and Wilcox cranes of three tons capacity are to be provided. These will be of semi-portal character and so arranged as to be well clear of the loading platform of the upper floor, their height from wharf level to the turntable of the crane being about 43-ft. The leading dimensions of the cranes have been fixed with a view to the rapid handling of goods from vessels of the largest class trading to the East. A lowering depth of 50-ft. below quay level and a hoisting height of 70-ft. above it have been allowed for. The hoisting, luffing and travelling speeds are 200, 150 and 50-ft. per minute respectively; the slewing speed is 2 revs. per minute.

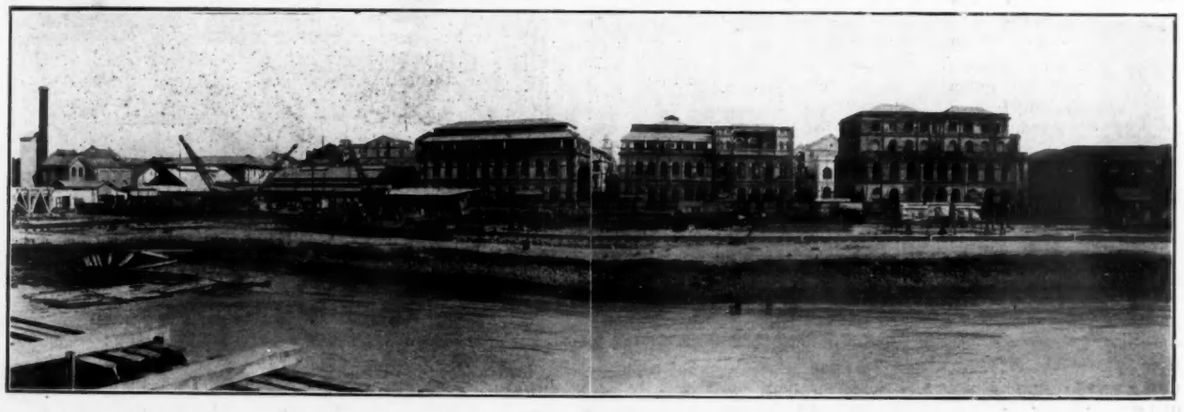
The three goods hoists in the transit shed will be of 3 tons capacity. The lift structures will be just within the building in the lower storey and will stand a clear distance of about 15-ft. back from the outside wall in the upper storey. The lift platforms will be about 15-ft. by 12-ft. and will have gates on three sides.

For mooring purposes there will be 10 cast steel bollards fitted on the tops of the cylinders along the front of the jetty and 12 mooring rings on deck level at the base of the front wall of the transit shed. Each cylinder will be protected by a heavy vertical teak fender extending from elevation 88.5 to the deck, a height of about 26-ft. A renewable rubbing piece 6-in. thick protects the face of the fender from abrasion. A set of four 12-in. by 1-in. wrought iron straps is clamped around each cylinder for the attachment of the fenders. The straps are formed in three segments bolted together and the front segments carry steel brackets to which the fenders are bolted. It is proposed also to have floating fenders of large round teak logs along the front of the wharf. These will be attached by chains and loose rings to heavy vertical guide bars and will therefore be free to rise and fall with the tide.

Method of Construction.

The design of the wharf and the urgency of the matter necessitated the use of the most modern plant and methods and indeed the improvisation of a more or less unique scheme of construction alone rendered it possible to expedite the work to the extent of nearly one year. Moreover, as will be seen, the site of the new wharf is hemmed in by existing wharves on either side which were fully occupied, and could not be made use of in any way for construction purposes. The Strand Market Wharf covers a land area of about 600-ft. by 200-ft., lying between the site of the New Wharf and the Burma Railway sidings. This area, destined ultimately to be used for railway yard accommodation, though inconveniently small for the purpose, was the only space available for a construction and storage yard.

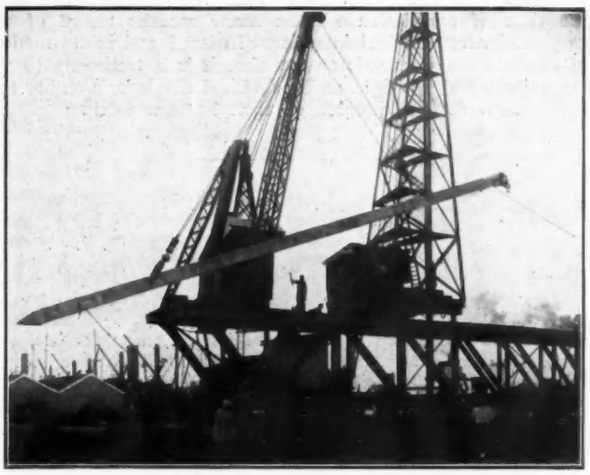
These considerations and circumstances governed the whole problem of planning the operations. So far as the actual work was concerned it was obvious that the foundation work was the crux of the matter and that the sinking of the cylinders supporting the wharf frontage would have to go forward concurrently with the driving of the pile foundations upon which the transit sheds were to rest. Experience in the sinking of cylinders has proved that they cannot be relied on to sink uniformly and that any attempt to hurry such operations often defeats its own end. A fairly wide margin of time therefore had to be allowed for the sinking of each individual cylinder with its sequence of operations. It was accordingly decided to provide a staging extending the full length of the wharf from which the whole of the cylinder sinking operations could be conducted, each cylinder being started and carried forward in series but without the necessity of any one cylinder having to await the completion of another. Further, since serious trouble in cylinder sinking operations is often caused by the tendency for the soft ground surrounding the cylinder to run in, involving the collapse of temporary staging, the staging piles were in this instance designed to be carried down lower than the founding level of the cylinders themselves. The river bottom upon which the cylinders were to be lowered was composed of soft mud and fine sand which had been previously dredged off to a moderately level bed about 32-ft. below high water so that the staging would have an unsupported height of about 37-ft. above the river bottom. The staging would further be subjected to heavy loading and would have travelling cranes running on a central track from one end of the staging to another, weighing under load each about 30 tons, and in addition would have to withstand considerable strain involved in the lifting and lowering of the cylinders. In these circumstances it was decided to straddle the two rows of



Strand Market Wharf: View of Construction Yard from River before commencement of Permanent Work, February, 1929.

The Port of Rangoon—continued.

cylinders by means of two wide gauge rail tracks one on either side of the central crane track, and to have on these tracks an overhead electric hoist capable of lifting and lowering a weight of 50 tons, or more than the total weight of the three lower segments of each cylinder. Along the shore side of the staging an additional single rail track was provided to carry the wheels under the outer end of a specially designed travelling pile-driving bridge, the weight on this rail amounting to the equivalent of about 120 tons dead load.



Pitching 75-ft. Pile by means of Derrick Crane.

For the sake of convenience it was also decided to use the blank spaces in the staging, that is, those bays in which no cylinder was to be sunk, as cells in which to do the actual pre-casting of the cylinder segments, so that the staging would when in use be carrying a number of these precast sections each weighing between 11 and 18 tons. To secure perfect stability, steel was used instead of timber for the piles and they were made of exceptionally large sections. They were each about 80-ft. long and consisted of steel tubular columns built up out of rolled steel sections, with a timber pile extension at the lower end. The timber extension fitted into an 18-in. square socket at the bottom of the steel shank and was intended to remain in the ground when the steel shank was ultimately drawn out. The steel shank itself was, for ease in transport and in handling and driving, made in two lengths of 30-ft. When driven the piles were braced together by means of timber frames previously built up on shore, these panels being lifted into position between adjacent piles and then wedged against them and bolted to their projecting flanges.

The deck beams of the staging consisted of 24-in. and 18-in. rolled steel joists adapted to the wide spans and heavy loads. Timbers were only used for cross braces and rail bearers. The staging piles were delivered ready made from the works in Scotland and were easily driven by means of a small floating pile-driving outfit. When finished with they have been withdrawn without much difficulty, the timber extensions, as had been intended, remaining behind in the ground. The steel shanks when recovered are entirely serviceable for re-use on other work. The panel bracings provided an easily fixed and efficient form of bracing. The deck beams and joists are unaffected by use and most of them will, when finished with, be incorporated as part of the permanent structure of the transit sheds.

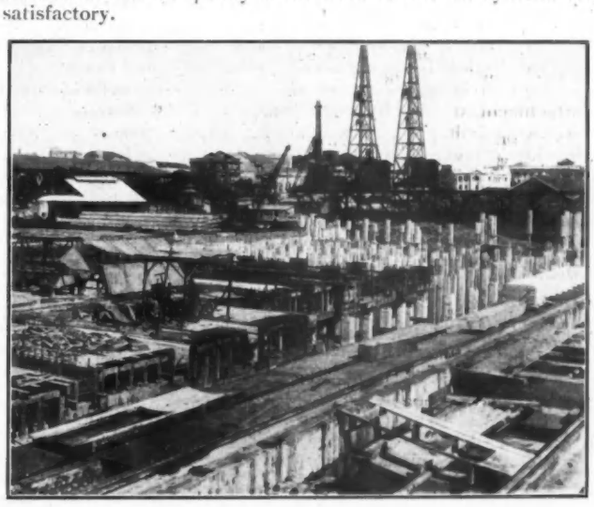
The staging as a whole has proved to be perfectly stable and admirably adapted to its purpose in every way. It may be regarded generally as the key feature of the scheme of temporary works. It enabled all the cylinders to be got under way at an early stage of the work and the cylinder sinking to be carried on generally as a self-contained job with a minimum of interference with the rest of the work, besides providing the means of transport for material used in the sinking operations. The building of precast cylinder segments on platforms suspended from the beams of the staging itself and in close proximity to their place of use was a feature of great value as it eliminated the problem of transporting these heavy and unwieldy masses. Finally the staging was invaluable as providing the outer track for the flying bridge, the inner track of which was on the shore. A clear span was thus provided of 160-ft. and on it was mounted the plant for lifting and driving the heavy concrete piles. This bridge was, after the staging, the most important item in the scheme of operations, and like the staging, it embodied features of some novelty. By means of it the work of handling, pitching and driving over 800 piles has proceeded with a remarkable degree of ease, speed and precision. The piles each weigh 12 tons and are 75-ft. in length. They have therefore to be handled and driven with care to prevent the starting of any cracks that would permit the subsequent penetration of moisture. The cost of the bridge was both less than what the cost of a temporary staging over the whole area would have been and less than the cost of a combination of cantilever frame and staging, and the speed and safety of working from the bridge is incomparably superior.

Lay-out of Working Yard.

Some features in regard to the layout of the working yard and the conduct of individual operations are perhaps worthy of mention. As regards concreting, the system adopted was to gauge and mix the concrete at a central mixing station. The concrete was run out of the mixer directly into a one-cubic yard bottom pouring skip which would be either drawn on a rail trolley or carried by a travelling crane, the concrete being discharged through the door in the bottom straight into the mould. There is a minimum of man-handling in this method, and the concrete itself can be mixed to an ideal consistency. The ultimate strength of concrete falls off very rapidly as a result of over-watering and a pouring skip of this nature was held to have certain advantages in that respect over shoots and concrete towers.

Another interesting point was the standardisation of lifting and transport by means of 5-ton travelling cranes with 40-ft. jibs running on 7-ft. gauge tracks. These machines are now produced, as the result of many years experience of contractors' requirements, to a high degree of efficiency in the speed of their operation, their robust character and their general excellence. Both in economy and in first cost and quality they are an outstanding example of British workmanship, and their use on this work was justified by their speed, safety in working, freedom from breakdown, and especially by their interchangeability. The grabs used in sinking the cylinders were operated by these cranes, the grabs themselves being of the orange-peel type and built to a massive pattern that was actually evolved by the British makers for excavating the cylinders at Workington Dock. After months of use the jaws still closed with absolute precision which must be admitted to be the crucial test.

Wherever the repeated use of identical forms made such a course profitable the shuttering for the concrete was made out of steel. Steel outer shutters were used for forming the pre-cast concrete cylinder segments, and steel sides and ends were used for making the concrete piles. These steel moulds were of a special design which had already been tested in the construction of a very large number of big concrete piles for the recent extensions at Avonmouth Dock. They were very quickly assembled, struck, cleaned and re-assembled by hand in convenient lengths. Their use was found to be exceedingly economical and the quality of the work turned out by them very satisfactory.



General View of Works.

The large 75-ft. piles were cast on a floor which lay between two parallel crane roads. The piles lay at right angles to the roads. The reinforcement skeleton was assembled on a floor adjacent to the casting platform and was lifted up by two cranes one on each of the roads and placed in the mould. The concrete was then poured out of the skips in the way already described, the cranes on the two roads acting as carriers. Quick-setting cement was used so that the piles could be lifted from the casting platform in three days. The two cranes then lifted the pile, one crane lifting at one point of suspension and the other crane at the other. After lifting, the two cranes travelling on their parallel roads carried the pile slung between

The Port of Rangoon—continued.

them and conveyed it to and deposited it on the stacking floor. Piles were lifted out of their stacks in the same way as and when required for use in the permanent work. The system was thus of great simplicity and the casting platform was laid out for the manufacture of five or six piles daily, this being the number required for daily use. The whole of the plant with the exception of the travelling cranes and with the exception of pneumatic tools, acetylene welding plant and a few other specialities, was electrically driven.

The Commissioners' Consulting Engineers received the Chief Engineer's plans and designs at the end of 1927 with instructions to draw up the detailed plan and estimates and to prepare the working drawings. These were submitted in March, 1928, and in discussion with the Commissioners' Chief Engineer were cast into their final form, and received the Commissioners' sanction on May 2nd, 1928. The estimated cost was Rs.48,54,000 (£364,000). The New Works Construction Department was then formed and came into existence by October, 1928. The actual construction was commenced by the end of that year.

Although the Strand Market Wharf is, at the moment of writing, not yet finished, it is sufficiently far advanced to indicate that in spite of unexpectedly wide variations in the nature of the ground and the generally unsatisfactory foundation the cost will coincide closely with the estimate and that the time of completion will be many months ahead of the Commissioners' original intention. In itself and in its method of construction it is safe to say that it is a testimony to the Commissioners' foresight and their Chief Engineer's ability and a fine example of reinforced concrete harbour work.

Scottish Harbour Notes.

Improvements at Leith Dock.

At a recently-held meeting of the Leith Dock Commission communications were submitted from the Unemployment Grants Committee stating that schemes amounting to £106,500 had been approved for grants to the Commission for improvements to be carried out at these docks. It was reported by the Docks Superintendent that this work could be commenced immediately, and the Commissioners thereupon agreed to proceed with this scheme without delay. The works now approved relate to the provision of improved approaches and increased hydraulic power for the new coal-hoists for the Imperial Dock designed to expedite the shipment of coal, and, in fact, thoroughly to modernise the coaling appliances at this dock; while another item relates to the widening of the dock sheds and improvements of quays and railway facilities at the Albert Dock at an estimated cost of £26,500.

Bo'ness Harbour Dues.

At a recently-held meeting of Bo'ness Town Council a member asked Provost Simpson—as burgh representative on the Forth Conservancy Board—what that body were doing in the interests of Bo'ness shipping. They collected dues from ships passing up the Forth (he added) but he did not know of anything they did in return for that money. The Provost replied that amongst other things the Conservancy Board were reclaiming ground in the west of Bo'ness, and he understood that part of that land had been let to a local firm for industrial purposes. The Conservancy Board had also taken over the whole of the lighting of the estuary for shipping. With regard to the Dodds Bank the Provost added that he would raise the question of responsibility for dredging at an impending meeting of the Board.

Protest against Closing a Harbour.

It appears that the action of a number of small boat owners who are seeking public support to a protest against the closing of the local West Harbour is resented by the Port-Glasgow Town Council. The boatmen are now engaged in a door-to-door canvas soliciting support, and have also organised a protest meeting in the Town Hall. The West Harbour was recently sold to the Town Council by the Harbour Trust for the purpose of filling it in and converting it into a children's playground. "This protest is being made by a few malcontents," observed Provost Dick in an interview. "The sale of the harbour to us was transacted in the proper and legal way, and no power on earth can prevent us from filling it and making the improvement suggested."

Government Grant for Girvan.

Girvan Town Council have received intimation that a Government grant has been sanctioned for local harbour improvement amounting to £4,425 for the reconstruction of the fish wharf; the piling of part of the harbour; and the dredging of the harbour. The grant has been the outcome of a policy of peaceful persuasion carried out by the Harbour Committee of Girvan Town Council—pressed forward for a considerable time—and brought to the notice of the various Government departments concerned. It is anticipated that the scheme will be carried out without additional burdens being imposed on the rate-payers.

New Pier to be Constructed at Eyemouth.

With the object of expediting the landing of fish by the many boats at Eyemouth—on the Berwick coast—the local Harbour Trustees recently considered an application to the Treasury for a grant towards the construction of a pier extending beyond the harbour estimated to cost about £60,000. This scheme, if carried into effect, will prove of great advantage to this fishing port, and would thus permit of fish being landed at all times; besides proving effective in preventing sea encroachment, and the accumulation of sand which for years has been a serious barrier to the progress of fishing. The question of Eyemouth Harbour improvement had frequently been under consideration during the last thirty years, but the new scheme is considered the most effective of all.

Dundee Harbour Trust Centenary.

This year there falls due the centenary of the Dundee Harbour Trust, and it is likely that this interesting event will be suitably celebrated. It is interesting to recall that previous to the year 1815 the local harbour was administered by Dundee Town Council, but so unsatisfactorily did that body apparently perform this work that in the year mentioned an Act of Parliament was passed placing the harbour in the hands of a commission. The members of this commission tackled their important duties with much zest and enthusiasm, and in the course of years carried out many important improvements including the construction of the graving dock and the King William IV. Dock.

In the year 1830 another Act was passed permanently vesting the local docks in the "Trustees of the Harbour of Dundee," who paid to the local Town Council the sum of £27,500 as the purchase price for their whole rights in the harbour and docks. At a recently-held meeting of Dundee Harbour Trust reference was made to the forthcoming centenary, and it was remitted to the Chairman (Mr. B. L. Nairn) and the Conveners of the four Standing Committees to consider what form the celebration should take.

Extension to Buckie Harbour.

Buckie Town Council recently held a special meeting to consider a letter from the Treasury with reference to a grant and loan for the extension of the local harbour. The scheme submitted comprised the completion of the East Basin at a cost of £77,000; protective works and removal of rock at harbour entrance costing £7,000; general repairs costing £8,000; and improvement of roadways on quays costing £4,600—altogether making a total estimated expenditure of £96,000.

The Fishery Board suggested that partial completion of the East Basin at an estimated cost of £31,000 should be sufficient, and recommended that assistance should be given from the Development Fund in aid of this work and of the protective works and removal of rock. The Development Commissioners therefore recommend that for the purpose of the execution of these works there be advanced a grant of £15,000 and a loan of £23,000, and Buckie Town Council unanimously decided to accept this offer and to take the necessary steps to have the scheme started immediately.

Grant Authorised for Improvements at Peterhead Harbour.

That the Treasury has authorised a grant of £39,000 towards the cost of harbour improvements at Peterhead was announced at a recent meeting of Peterhead Harbour Trustees. This offer is conditional on the Trustees raising an equivalent amount from other sources, and the grant includes the sum of £14,000 authorised by the Treasury on October last towards the same purpose. The original application by the Trustees was for £78,000 made up of a free grant of £39,000; a loan without interest of £19,500; and a loan with interest of £19,500. Great gratification was expressed by the Trustees at the attitude adopted by the Treasury, and subsequently the local Town Council agreed to act as guarantors for the money that the Trustees agreed to borrow for the Harbour improvement scheme.

Notes from the North.

Dock Locomotive Traffic.

OWING to the large number of locomotives, tenders, etc., to be shipped in bulk at the Birkenhead Docks, the Mersey Docks and Harbour Board has confirmed the decision of the Docks and Quays Committee authorising the engineer to provide additional facilities on the south side of the West Float. The railway lines are to be extended in the vicinity of the 87-ton steam crane, this alteration involving the removal of the 27-cwt. hydraulic crane and various minor changes.

Jarrah Wood for Pier Construction.

Jarrah wood supplied by Messrs. Edmunds, Taylor and Co., of Wallasey, has been used for the reconstruction and rebuilding of New Brighton Pier. The tree from which this wood is obtained grows to a height of 90-ft. to 120-ft.—the trunk often showing a length of 50-ft. to 60-ft. to the first branch and being from 3-ft. to 5-ft. in diameter. The wood is of deep red colour, hard and dense in texture, its weight when fresh being about 70-lbs. to the cubic foot and when seasoned about 10-lbs. less. It is largely used in England for street paving purposes and pier construction, and in Western Australia, Cape Colony and other countries, for piles, jetties, bridge building and railway sleepers. It is pre-eminent not only for strength and durability, but as being impervious to sea-worms.

Presentation.

Mr. L. Leighton, M.Inst.C.E., principal assistant engineer, Mersey Docks and Harbour Board, a few days ago presented on behalf of the staff a farewell gift to Mr. Charles Aldwin Kempson on his retirement from the position of superintendent of revetments in the Mersey Bar and sea channels. Mr. Leighton paid tribute to the long and splendid service of Mr. Kempson, after twenty-eight years, as superintendent of bar dredging, resident engineer in charge of important sewerage works, and latterly as superintendent of revetments, and to his qualities of head and heart. He handed Mr. Kempson a large solid silver tobacco box, suitably inscribed.

Caernarvonshire Channel.

At the monthly meeting of the Caernarvon Harbour Trust, the superintendent, Captain Richard Jones, announced that the south-west entrance to the new bar channel from seaward, which had been under observation during the last eight months, had been slowly working westward until it had by now become one with the northern channel, marked by the buoys. Though the new channel was carrying better water than the old channel marked by the buoys, it would not be advisable to move the buoys until the new entrance had become fairly permanent in direction and depth.

New Dock Station.

Since the negotiations between the Mersey Docks and Harbour Board and the directors of the Liverpool Overhead Railway Company, good progress has been made with the construction of the new Gladstone Dock station of the Liverpool Overhead Railway, which it is expected will be completed and ready for opening this month (May). Despite the fear expressed by the directorate two years ago that the cost would be prohibitive, it is anticipated that the new station will bring increased revenue in addition to providing for convenient travel to and from the world's largest dock. The station is midway between the Alexandra Dock and Seaforth Sands stations, and is practically opposite Holt's warehouse. The estimated cost is approximately £5,000. The new station will be similar to the other stations on the line except that as the L.M.S. Railway goods yard lies on the east side there will be only one entrance. Passengers will cross to and from the east side by means of a footbridge.

Birkenhead Ferries.

The Birkenhead Corporation Ferries Committee, having considered the position of the insurance fund of the ferries undertaking, having regard to the decision to insure the whole risk on the ferries fleet with underwriters, recommend that, subject to the Finance Committee agreeing to the creation of a general purposes fund for the borough, a sum of £10,000 be transferred to that fund from the insurance fund of the ferries undertaking.

Mersey Tunnel Mishap.

Due to a fall of rock in the workings of the Mersey Tunnel, one man was killed and three injured a few days ago. A 50-ft. length of the huge steel lined 44-ft. tube had been completed along the section of the Dale Street line, and the excavations were being proceeded with for further lining. A gang of about eighteen men were engaged at the time of the accident on this work on the rock face, but there had been no blasting for about four hours when suddenly there was a huge fall of 60 or 70 tons of sandstone. There is always a danger of debris falling after the major fall has occurred and precautions are taken to make sure that the place is safe for the men before they are allowed to enter that part of the tunnel.

More Timber Storage Facilities.

Mersey Docks and Harbour Board intends to provide improved facilities for the storage and handling of timber upon the area of land to the north of the Gladstone Graving Dock, Liverpool. A scheme of layout has been approved to provide road and rail avenues upon the ground, making what is anticipated to be a convenient and economical improvement, to the advantage of the timber trade generally. The engineer has estimated the cost of the improvements at £3,222, and his plans and recommendation have been adopted by the Board on the recommendation of the Works Committee.

Excavated Rock for Filling Dock.

The thousands of tons of rock being removed from the bed of the Mersey during the construction of the Mersey Tunnel have been usefully employed on both sides of the river in filling up other holes in the ground and particularly on the Liverpool side where a great deal of the sandstone has been dumped on the foreshore at Otterspool to provide a foundation for the proposed promenade. Further consignments of the "spoil" have been diverted to the docks, where the small branch of the Morpeth Dock is being filled in to provide additional land for the Great Western Railway Company's extension to their goods depot. The branch dock is comparatively small in area, but it is about 30-ft. in depth. Eventually a dam will be built across the mouth of the entrance and the remaining water pumped out. When the ground is level with the surrounding area, railway lines will be laid and the whole will be covered by a verandah.

Wonderful Working Model of Dock System.

Mersey Docks and Harbour Board intends to exhibit a scale model of the Gladstone Dock system and a section of the River Mersey with miniature liners sailing thereon before berthing in the dock, in the British section at the forthcoming Antwerp Exhibition. The model will be so arranged that miniature liners will slowly pass up and down the river and into dock; lock gates will open and close automatically, and even the rise and fall of the tide will be reproduced. The model, which has been made in London, is worked by electricity. There are thirteen travelling electro-magnets of a design specially made for drawing the liners into the dock, in addition to eight smaller magnets, placed under the tanks in positions where it is desired to hold vessels. The model is constructed to a scale thirty feet to one inch. In detail it shows all the Gladstone docks, warehouses, railways, cranes and other salient features, accurately to scale, together with eighteen steamers representative of the lines regularly trading to the port of Liverpool, all afloat in the docks or river. Two of these steamers enter the Gladstone docks, move to their respective discharging berths and pass out again into the river Mersey at varying stages of the tide, while another vessel steams directly up and down the river. If the tide is high, the dock gates will open automatically, but if high water is passed or has not arrived, the vessel will enter the lock, the outer gates will be closed, the water in the lock levelled to the water level in the dock and the inner gates opened to allow the vessel to proceed to her berth. Delicate mechanism regulates the rise and fall of the water, opens the dock gates and alters the strength of the magnetic current. The movement of the ships is controlled by an elaborate system of electro-magnets which are themselves attached to three different chains, having a total length of over 100-ft. These chains revolve at constant speeds and are driven in turn by an electric motor, capable of very precise control. Where it is necessary to halt the ship, the electric current which has been passing through the particular magnet directing the vessel is cut off automatically, and at the same time a stationary magnet fixed where the vessel is to stop then comes into operation.

Electricity for Dock Estate.

For some years there has existed between the Liverpool Corporation and the Mersey Docks and Harbour Board an agreement whereby electric current is supplied on special terms. That agreement, which recently expired, has now been renewed for a further period of five years on revised terms.

Notes from the North—continued.

Red Pier, Douglas—Letting of Contract.

The contract for the dredging work to be done in connection with the Red Pier, Douglas (I.O.M.), extensions, has been let by the Harbour Board to the James Dredging and Towage Co., of Southampton and London. Work will be commenced immediately and it is hoped with ordinarily favourable weather that it will be completed at the end of the coming season. The firm of C. H. Campbell and Co., who carried out dredging work in the Isle of Man in 1914 and again in 1922-3, is now merged into the James Dredging and Towage Co.

Douglas Harbour Appointments.

The Douglas (I.O.M.) Harbour Commissioners have appointed Mr. W. H. Moore, at present second assistant harbourmaster at Douglas, to be first assistant harbourmaster, in succession to the late Mr. John Corteen. Mr. T. E. Cowell is appointed second assistant harbourmaster and Mr. Wesley Clague boat inspector. The Harbour Commissioners have also appointed Mr. N. A. Matherson, of Aberdeen, student of the Institute of Civil Engineers, to be assistant harbour engineer. Mr. Matherson served his pupilage with Mr. Gordon Nichol, harbour engineer, Aberdeen, and has lately occupied a post with the firm of Henderson and Nichol, consulting engineers, of Aberdeen.

Clarence Dock Power Station.

The Mersey Tunnel Joint Committee has requested the Liverpool Corporation to permit Mr. P. J. Robinson, the city electrical engineer, to place his services at the disposal of the Mersey Tunnel Joint Committee, and its engineers in a consultative and advisory capacity in connection with the electric lighting and power supply to the Mersey Tunnel. The Tunnel Engineer, Mr. Basil Mott, to be responsible for the payment of any fees which may be arranged for such services. The Electric Power and Lighting Committee has decided to grant the request (subject to the assent of the City Council). Mr. Robinson will be permitted to retain any fees which might be received in consequence of any arrangement between himself and Mr. Basil Mott.

New Mersey Dock.

During the coming year Messrs. Lever Bros. new dock at Bromborough will be completed and opened, and will, in due course, assist the two enterprises at Port Sunlight and Bromborough in the prompt and economical handling of their most important raw materials. The work on the dock has already been in progress for over six years.

Repairs to Landing Stage.

The suspension of the Mersey ferry service between Liverpool and Rock Ferry has not been caused, as some people suppose, by the collapse of the river wall near the Liverpool landing stage, but by the extensive repairs necessary to a portion of the Liverpool Landing Stage opposite the berth of the Woodside Ferry and Rock Ferry passenger steamers. It is expected that the work of repairing the stage will occupy about five weeks until the end of May. The necessity of the repairs to the Landing Stage is due to some of the keelsons which support the deck of the stage requiring renewal or repair. The keelsons rest on the pontoons on which the stage floats and in order to reach them and to carry out the extensive repairs a large portion of the deckwork of the stage will have to be lifted and relaid.

Manchester Ship Canal Returns.

From the Manchester Ship Canal Company we have received the monthly approximate traffic return for the month of March, which shows revenue of £106,859, a decrease of £7,844 on the corresponding period of last year. The total for the first quarter of this year was £323,704 as against £336,327 in the corresponding period of 1929, £332,509 in 1928, £346,259 in 1927, and £315,193 in 1926. It is evident that the reduction in the charges on traffic, made in order to pass on to users of the canal the benefit of rate relief, has not resulted yet in an increase of traffic.

Mersey Tunnel Progress.

The assertion that the new Mersey Tunnel will be opened for vehicular traffic about midsummer of next year sounds too good to be true, in fact it is more likely to be untrue. Although the three contracts for the construction and lining of the main tunnel with cast-iron segments are well advanced, no contracts have yet been let for the concrete roadway and it is very doubtful if that big job can be finished in twelve months. Then there is the question of ventilation to be settled. Plans have been put forward and on these a decision will shortly have to be made. It is feared that delay may be experienced before a satisfactory system of dealing with petrol exhaust can be tested and applied. Experimental tests may have to be made before a final choice of a ventilating system is made. Ninety and a half per cent. of the excavation for the full diameter of the under-river section of the Mersey Tunnel has now been completed. The work is proceeding at six working faces. Of the cast-iron lining 87 per cent. is in place, being 15.3 per cent. ahead of schedule. The whole of the upper half of the lining is in place. On the Birkenhead side 57.2 per cent. and on the Liverpool side 45.4 per cent. of the excavation has been done, both contracts being ahead of schedule. Of the three contracts, amounting to £2,833,067, the value of the work done is £1,746,260 or 61.6 per cent.; and of the total excavation of 619,500 cubic yards 421,800 cubic yards have been completed, equal to 68 per cent. The number of men engaged is 1,525.

Improving Seacombe Ferry.

The well-known clock tower 90-ft. high which has overlooked the River Mersey from Seacombe Ferry, Wallasey, for half a century is to be demolished, this being the first step in connection with the £100,000 scheme to improve the ferry bridges and approach at Seacombe and in order to relieve congestion during the rush hours. A third bridge is to be attached to the floating landing stage. The scheme, which includes new ferry offices, workshops and a much more imposing pierhead, will take about three years to execute.

Connah's Quay Docks.

Flintshire County Council has arrived at an agreement with the L.N.E. Railway Co. with reference to Connah's Quay wharves and docks. The original Bill of the railway company proposed the abandonment of the whole of the docks, and it was suggested as a compromise that Flintshire would not object to the Bill going through provided the railway company would spend a certain sum in putting three berths into a satisfactory condition. For that purpose the railway company agreed to spend a sum not exceeding £2,500. Negotiations have been proceeding and the draft agreement provides for the spending of this sum, after which the railway company would not seek to exercise their powers to abandon these three berths for a period of ten years. At the end of ten years, if the traffic has not materially increased they will be at liberty to abandon the berths, but if traffic increases the matter will be reconsidered, and if substantially, the agreement will go on for another period of five years.

Port of Manchester.

East Indian cotton has been coming in particularly well and imports already considerably exceed those of the corresponding period of last year. The " City of Canton " arrived with an exceptional cargo of 10,000 bales during March and on April 7th the " City of Salford " arrived from Bombay and Karachi with over 17,000 bales, which easily constitutes a single cargo record for Indian cotton. The " City of Birmingham " is on passage with 5,500 tons of cargo including cotton and will be followed by the " City of Paris."

The Jaffa orange season is drawing to a close. This season's imports will total 340,000 cases against 200,000 last season. The " Diana " entered on April 4th with 26,000 cases and the " Cyprian Prince " has brought a similar number.

Direct consignments of New Zealand and Australian apples are expected at Manchester Docks this season. The "Otaki" will be leaving New Zealand shortly with 35,000 cases and a cargo of 40,000 cases will follow. The " Banffshire " sails from Tasmania this month (April) with 28,000 cases of apples and will be followed at monthly intervals by the " Trojan Star " from Tasmania and " Berwickshire " from Australia mainland ports each with about 30,000 cases.

Oil imports have been good during the last month, close on thirty vessels discharging at Manchester or Stanlow. Full cargoes arriving during the period include whale oil from South Georgia and Esparto Grass from Oran, the latter being discharged at Ellesmere Port.

Outward freight to the Persian Gulf continues to be good, the " Registan " sailing with a full cargo, which includes aeroplanes embarked at Ellesmere Port.

Although pedigree stock for Canada is not an unusual cargo for the Manchester liners St. Lawrence service, special interest centred on the shipping last month of a consignment destined for the Prince of Wales' Canadian ranch. The cattle sailed on the " Manchester Division " for St. John, New Brunswick.

In spite of activity in certain traffics the trade of the port as a whole has not been, in the last month, as brisk as in the corresponding month of last year.

Retirement of Chief Engineer to Manchester Ship Canal Co.

The retirement of Mr. Henry Ashman Reed from the position of Chief Engineer to the Manchester Ship Canal Company is announced.

Notes from the North— continued.

Mr. Reed, who is a member of the Council of the Institute of Civil Engineers and a member of the Institute of Mechanical Engineers, has been Chief Engineer to the Ship Canal Company since 1912. His connection with the waterway, however, dates back to the days of its construction when he was a sectional engineer under the contractor.

Earlier experience on Gibraltar Harbour works and on Southampton deep water docks construction, as chief engineer to the contractors, together with many years' experience of Ship Canal work have gained for Mr. Reed a wide reputation as an authority on port works, in consequence of which wide claims have been made upon his expert knowledge.

At the request of the British Foreign Office he became a member of the International Technical Committees inspecting the Rhine in 1924 and 1929; and in 1926 a British delegate to the Navigation Congress at Cairo. In 1915 he acted as adviser to the War Office on the Port of Richborough, and to-day sits on the Suez Canal Consultative Works Commission.

The Egyptian Government invited Mr. Reed to Egypt in 1928 as expert adviser on Inland Waterways and in the following year he was appointed a member of the International Commission on the River Congo for the Belgian Government.

Mr. Reed, during his eighteen years as Chief Engineer to the Ship Canal Company, has been responsible for a great deal of important development and construction work. The deepening of the lower reaches of the Canal; the construction of Stanlow Oil Dock and No. 2 grain elevator, new transit sheds and works of extension and reconstruction totalling about £3,000,000 have been carried out during his term.

In relinquishing the post of Chief Engineer and devoting himself to consultative work in London, Mr. Reed does not withdraw the benefits of his ripe experience from the Canal Company, for his services will still be at the disposal of the undertaking as a consultant.

In spite of the heavy professional calls on Mr. Reed's time he has found it possible to do much useful Local Government work. He has been a member of the Bowdon Urban District Council for many years and Chairman for three years, and Governor of Altrincham High School for Boys for seven years. He has contributed to the literature of engineering and delivered the Vernon-Harcourt lecture in 1926.

Mr. Fred Berry Greenwood, member of the Institution of Civil Engineers, succeeds Mr. Reed as Chief Engineer of the Manchester Ship Canal Company.

Mr. Greenwood joined the engineering staff of the Ship Canal Company in 1895 under the late W. H. Hunter, then Chief Engineer. In 1901 he was appointed Resident Engineer of the Tidal Division of the Ship Canal and in 1911 became Assistant Engineer of the Company.

Mr. Greenwood was born and educated in Manchester. In 1891 he was awarded a Manchester City Council Scholarship to Owens College (Victoria University).

Port of Southampton Topics.

Busy Trans-Atlantic Season Expected.

APRIL has seen the season's activities in Dockland taking shape for what promises to be a very busy season, and it is consequently expected that the trans-Atlantic passenger traffic will again touch big figures this summer.

With the sailing of the " Homeric " early in the month the White Star Line again had their " big three " on regular schedule. The sailing of the " Mauretania," too, brought the Cunard Line's express service to full strength again, while other companies have got back to their ordinary programmes this month.

During the thirty days of April, 28 arrivals and departures of ships exceeding 24,000 tons were scheduled in connection with a very full programme at the Docks, and this pressure will increase as the season proceeds. There was one outstanding period of four days when eight vessels of over 24,000 tons were dealt with at the port. During this period, which extended from April 16th to 19th, there were at the port the White Star " Majestic " (56,621 tons), " Homeric " (34,351 tons), "Adriatic " (24,563 tons), the Cunarder " Mauretania " (30,696 tons), the North German Lloyd record-breakers, " Bremen " (51,656 tons) and the " Europa " (51,000 tons), the United States " Leviathan " (59,957 tons), and the Holland America " Rotterdam " (24,149 tons).

Another interesting feature has been the extended activities of the Canadian Pacific Line. Following a lull in their operations in the preceding month, they have got fully into their season, and the April list of movements included four arrivals from St. John, one from New York, two from Antwerp, two from Hamburg, and two from Mediterranean cruises. The departures were five for Canada, two for Hamburg, and one for Antwerp.

March Proves a Quiet Month.

Southampton Docks statistics for March do not make quite such good reading as is customary. The month was a quiet one, owing, no doubt, to many ships being pleasure cruising, and in consequence there are decreases in the figures. The number of vessels which entered the port was 253, against 248 in the corresponding month last year, and outward 252 as compared with 249, but despite these increases there was a drop in the tonnage. The inward gross tonnage amounted to 1,118,537, and outward to 1,165,481, a falling-off of 178,314 inward, and 114,258 outward. The net tonnage decreased by 87,140 inward and 65,735 outward.

The cargo showed an aggregate decrease, for although the inward freight mounted in gratifying style, there was a heavy slump in exports. The imports totalled 50,223 tons as compared with 42,862 tons, but outward the figure was 39,662 tons compared with 53,569 tons, a fall of 13,907 tons compared with an increase in imports of 7,362 tons.

The passenger traffic was also down for once in a way, for while the inward total mounted from 10,468 to 10,731, the outward aggregate fell from 14,902 to 12,674. The number of troops who embarked or disembarked at the Docks increased, the inward total being 359 in advance of that in March, 1929, and the outward figure being 2,026 in excess.

Progress of Dock Extension Schemes.

Striking progress continues to be made in the extension of the Docks on the Western Shore, Southampton. Nearly 8,000,000 tons of spoil have been dredged from the river Test and eleven of the 7,000-ton monoliths, representing 550-ft. of quay wall, have been sunk to their required depth. They are ready for the process of sealing the bottom of the wells. Fifty other monoliths have been sunk to depths varying to 94-ft. below coping level. Sir Robert McAlpine and Sons (London), Ltd., who are responsible for this work, are forging ahead in splendid style, and the James Dredging, Towage, and Transport Co., Ltd., are displaying equal energy in the dredging and reclamation work.

Much of the spoil dredged from the Test has been found suitable for the formation of the reclamation embankment, of which that on the south side of the area is upwards of 150-ft. in width on top. This will facilitate the sinking of the monoliths which will form the quay wall. The embankment has been completed over its entire length of some 4,000-ft., while the embankment at the western end of the area has been completed except for the portion occupied by the temporary sluices.

The construction of the culverts for the extension seawards of the storm water drainage for the supply of water to the Southampton Corporation Baths and Electricity Station nearby for condensing purposes is well advanced. Of the incidental works the demolition of the old toll-house at the Royal Pier, consequent upon the provision of rail connection between the existing docks and the new docks has been completed, and a larger and more imposing structure has been built in its place. In front of the new pier entrance is a large concourse, which will be flanked at the eastern and western ends by shrubbery.

New Liner Welcomed.

Southampton welcomed another new liner, the second this year, when, on Good Friday, the Rotterdam-Lloyd's magnificent new motor ship " Baloeran " called to embark passengers and load cargo for her maiden voyage to the Dutch East Indies.

The " Baloeran " is the biggest ship so far placed on the Rotterdam-Lloyd service, and she is also the speediest, having attained 19½ knots on her recent trials. In March next year the " Baloeran " will be joined by a sister ship named the " Dempo," at present in course of construction. Both ships are of about 18,000 tons.

Replete with every modern luxury, the " Baloeran " sets up a new standard in travel to the East and represents a striking advance as compared with the same Company's vessels built even a few years ago. The public rooms are charming and comfortable, especially the first-class lounge, which is a spacious and ornate apartment situate forward. Its windows permit of a sweeping view of the sea, as do those of the smoke room

Port of Southampton Topics—continued.

which adjoins. Both apartments are panelled in polished woods, handsomely inlaid, the furnishing is pleasing and the lighting ingenious and attractive. The dining saloon, connected with all decks by two electric elevators, is light and airy and very beautifully furnished. The other public rooms are equally well conceived and render the " Baloeran " a worthy " Queen of the Sea."

Increased Speed of Liners.

Of late the importance which shipping companies attach to speed has been much in evidence. In the ship construction which immediately followed the war this feature of travel was not given particular attention, but recently several examples have been given of the consideration which this feature speed is now receiving. The North German Lloyd went to great expense to increase the speed of the " Columbus," while the Hamburg-America line have also undertaken the re-engining of their four chief passenger ships sailing from Southampton, with the result that they have substantially reduced the period of the passage by the two vessels which have already returned to the service.

Another indication of the value placed upon speed is to be found in the decision of the Nederland Royal Mail Line to spend a large sum in giving the p.c. " Hooft " extra speed. The vessel was placed on the Southampton-Java service two or three years ago, but the rapid progress that will be illustrated in the new ships, the "Johan van Oldenbarnevelt " and the " Marnix van St. Aldegonde," has made it advisable that the speed of the p.c. " Hooft " should be increased, and for this purpose she will be off the service for a considerable period next winter.

Advantage will be taken of the opportunity to make alterations to the accommodation of the " Hooft," so that she will be a more fitting companion to the latest ships, which will be the largest that have ever sailed from Southampton on the Java route. The new motor ships, the first of which will appear at Southampton in May, will shorten the length of the voyage. Both the new vessels will be on active service before the " Hooft " goes into temporary retirement. During this period the " Koningen der Nederlanden," which was to go out of the Southampton service this year, will continue, remaining on the service until the " Hooft " returns early in the New Year.

Abolition of Second-class Accommodation.

The first of the White Star Line's big ships to have her second-class accommodation converted into tourist third cabin, the " Homeric " now has room for 840 passengers in that department. The fine public rooms and spacious staterooms which have become available for the tourist passengers render the " Homeric " a very attractive means to a trans-Atlantic holiday. All the accommodation has been overhauled during the " Homeric's " spring clean, and its appointments have been brought right up to date. Extensive promenade space is now at the disposal of the tourist class and an elevator connects the various decks.

With the exception of the " Statendam," the vessels of the Holland-America fleet have now abolished second-class accommodation. The " Rotterdam," the second largest vessel of the fleet, which after a cruise has rejoined the passenger and mail service to the States, has been overhauled from stem to stern and many improvements made in her accommodation. Her second-class space is now assigned to tourist thirds, who have all the comforts of the former cabins, lounges and dining room of the second class. She has also been equipped with a swimming pool and gymnasium. In the case of the " Nieuw Amsterdam " the change over from the second to the tourist class gives the tourists the use of a promenade deck that runs the length of the steamer.

Annual Dinner of Marine Department of Southern Railway.

Speaking at the annual dinner of the staff of the Marine Department of the Southern Railway Company at Southampton, Mr. G. R. Newcombe, Docks and Marine Manager, said that the Marine Department had established a wonderful performance during the past year, especially the officers and crews of the ships who had carried on so valiantly during the fury of the November and December gales. During 1929 their ships carried 4,000,000 people, and as there had been only one casualty, the sea-going staff had every reason to congratulate themselves.

Mr. R. P. Biddle, Assistant Marine Manager, referred to the steps being taken by the Company to modernise their fleet, and said he doubted whether there was any other Company which had built 24 new steamers in seven years. Another striking piece of evidence of their progressive policy was to be found in their gigantic dock extension scheme at Southampton.

It was mentioned that during the last year over 3,000 voyages were made across the Channel, which represented an average of nine ships at sea every night of the year. Frequently there are 15 or 16 of the Company's Southampton fleet crossing on the same night, and on one occasion last summer 19 vessels of the fleet were at sea at one time.

The "Isle of Guernsey."

Before the Southern Railway's new cross-Channel vessel, " Isle of Guernsey," joined her sister ship, " Isle of Jersey," on the Channel service at the beginning of the month, Southampton Master Mariners' Club, by invitation, held one of their weekly luncheons on board the new ship and went for a trip down Southampton Water. The " Isle of Guernsey " was under the command of Captain T. N. Darnell, a popular member of the club, and the members had a thoroughly enjoyable experience, although the weather conditions were not very pleasant. Lt.-Col. G. S. Szlumper, Assistant Manager of the Southern Railway, through whom the invitation to make the trip was extended, was unable to be present, but the Company was represented by Mr. G. R. Newcombe (Docks and Marine Manager, Southampton). At the luncheon the toast of the new vessel was cordially drunk by the Cachelots.

The " Isle of Guernsey," during her cruise in the Solent, passed close to the " Europa," and the Cachelots took the opportunity of sending their greetings to Commodore N. Johnsen, commander of the " Europa," who is a member of the club.

Commodore of Union Castle Fleet to Retire.

When the Union Castle liner " Carnarvon Castle " reaches Southampton on the conclusion of her present trip, Captain W. F. Stanley, the Commodore of the Union Castle fleet and the captain of the " Carnarvon Castle," will retire after fifty years' service at sea.

Captain Stanley began his association with the sea in 1880, when at the age of 15 he became an apprentice in the clipper ship " Hawkesbury," sailing to Australia. Most of his sea-going service has been spent in the employ of the Union Castle Company, and his long association with the Cape trade was recognised in 1927, when he was appointed Commodore of the fleet.

Though in his fifty years at sea Captain Stanley has never been involved in a serious accident, he has had many exciting experiences. He was in command of the " Saxon " when, while that vessel was at anchor off Madeira, a German ship ran into her and damaged her bows. During the war Captain Stanley was in charge of the " Gascon," which was used as a hospital ship, and for his services he was twice mentioned in despatches.

Amalgamation of Hamburg Port Authorities.

The Hamburg Assembly has passed a bill incorporating the department for waterways and port construction (Abteilung Strom und Hafenbau), which has hitherto been a department of the building authority (Baubehorde), in the Department for Trade, Shipping and Industry (Deputation fur Handel, Schiffahrt und Gewerbe).

Trans-Atlantic Liners at the Great Western Railway Company's South Wales Ports.

The opening of the 1930 ocean passenger season at South Wales ports commenced with the sailing from Cardiff (Bute) Docks of the Canadian Pacific liner " Minnedosa " on March 26th.

Since that date, there have been further calls at the Port of Cardiff by the Cunard liner "Ausonia " on March 29th, and the White Star liner " Megantic " on March 30th. In both these cases the calls were made in connection with the Emigration traffic from this country to Canada.

Following on these three vessels, the Canadian Pacific Company's liner " Melita " called at the Bute Docks, Cardiff, on Saturday, 5th April, when about three hundred passengers were embarked for Canada and the United States of America.

The " Melita " is 520-ft. in length, 67-ft. in breadth and has a gross tonnage of 15,183 tons.

As in the case of the liner " Minnedosa," the " Melita " was berthed in the Queen Alexandra Dock, where the arrangements are most convenient for passenger traffic. The special trains which the Great Western Railway Company ran to convey the travellers, terminated their journey alongside the commodious warehouse, where there is ample room and excellent facilities for customs and medical formalities, post office business, refreshments, waiting accommodation and other necessary services in connection with embarkation. The vessel is berthed in front of the shed, and passengers walk straight aboard after the business of the shed is concluded. The arrangements again evoked many expressions of appreciation from all concerned.

North-East Coast Notes.

Tyne Improvement Commissioners' Meeting.

At the meeting of the Tyne Improvement Commissioners on March 18th, Mr. Francis Priestman, Chairman of the Finance Committee, made his annual statement as to the financial operations for the year 1929. He said there were three salient features in the financial operations —increased revenue, reduced maintenance expenditure, and a surplus of £84,000 after meeting every commitment, including the annual amount required for the redemption of their loan debt. That he thought they would agree was peculiarly gratifying. The small amount of capital expenditure was reflected in the loan debt. In the course of the year a sum of £603,000 matured, of which £431,000 was renewed or replaced, leaving a difference of £172,000 by which the indebtedness of the Commissioners on loan account was reduced. They were thus placed in the happy position last year of more than meeting their redemption figure of £75,000, and were able to carry forward a sum well in excess of the amount by which they must redeem the debt this year. It would probably be of interest to them to learn that no part of the loan debt of the Commissioners carried a higher rate than 5 per cent., and that the average rate at the end of 1929 was £4 11s. 9d. per cent.

Looking at the revenue receipts they found that 1929 provided a total of £670,000—£56,000 more than 1928, notwithstanding the reduction of dues made in 1928 and 1929. Dealing with expenditure, he pointed out that maintenance charges for the year amounted to £317,000 or £13,000 less than those of 1928, a reduction that was secured without any loss of efficiency.

Tyne's Proud Position.

Turning to the volume of trade that passed through the port last year, he said it was well known that their coal exports very nearly reached pre-war figures. Indeed, he thought he was not going too far in saying that but for adverse weather conditions during the latter half of December, which delayed the arrival of ships, the 1913 figures would have been exceeded. The figures of 1929 formed a record for post-war years except 1923, which they knew was abnormal, due to the Ruhr occupation. But 1929 would bear a little closer scrutiny. Speaking to them last year, he drew attention to the volume of coke export of 850,000 tons in 1928 compared with 307,000 tons in 1913, and he ventured to forecast that 1929 would see an export of over a million tons. That forecast proved to be a correct one, the total being 1,070,000 tons. If one had regard to the fact that 100 tons of coal produced 67 tons of coke, it would be seen that the coke export in terms of coal amounted to something like 1,600,000 tons. Another interesting fact was the share which the Tyne secured of the increased shipments from the North-East Coast ports. Of the coal exporting ports of the United Kingdom the Tyne was at the top. The total increased volume of the North East Coast ports was a little over 4½ millions. Of that the Tyne had over 3½ million, or 78 per cent. of the total. No port in the country had anything like the increase the river had in 1929. Of a total national foreign export of 60 millions the Tyne provided 13 millions, or 21 per cent. of the whole. They had now had a full year's experience of the week-end working arrangements which came into operation in December, 1928, and he noted that from the Tyne alone 1,100 ships carrying a total of more than 3,000,000 tons benefited by the arrangement.

Mr. Priestman then referred to the traffic at the Commissioners' Quay at the Albert Edward Dock. Since the Newcastle-Bergen Line made its home there, he said, there had been a gradual and continuous expansion of trade between the Tyne and Norway. There had also been a substantial increase in the use of the Quay by vessels other than those of the Norwegian line. Here they might reasonably expect a further expansion. There was accommodation for additional traffic, and with a view to the future the Board some time ago wisely decided upon an extension of the quay which is now in process of completion, that extension due to be ready by the end of May, would provide an additional berth and more quay accommodation.

Coal Trade Difficulties.

Concluding, Mr. Priestman said he did not on that occasion intend to make any forecast as to the future as he had done in previous years. The difficult position of the industry on which the North-East Coast was so dependent, and which was one of the basic industries of the country made it difficult to feel any confidence in the future. It seemed unfortunate that such a vital national question could not be considered outside of the political atmosphere. As that seemed to be unattainable they had no alternative except to wait and see what might emerge from the present political discussions.

Sir George Lunn expressed the hope that the Commission's £84,000 surplus foreshadowed a further reduction in dues, and in reply, Lord Kirkley, the Chairman, stated that they had had a talk with the coal-owners' representatives on the matter of further help in the matter of dues, and it had been decided to recommend the Finance Committee that the Commissioners' dock charges be reduced by ¾d. per ton in respect of large coal, which would represent between £7,000 and £8,000 in a year.

Newcastle Quay Extension.

At a meeting of the Newcastle City Council on April 3rd, a report from the Trade and Commerce Committee was adopted recommending that the Council should proceed with an extension of Newcastle Quay at a cost of more than £200,000. Ald. Lee, Chairman of the Committee, said they were "chock-a-block" on the Quayside, and did not know where to put ships coming to the town. On the other hand, Councillor Dalgliesh, himself a ship-owner, said that the scheme was unnecessary. New berths were not wanted, because existing berths were so often empty.

Jarrow Development.

An important development has been made by the Mercantile Dry Dock Co., of Jarrow, who have just completed the laying down of some tanks for storage purposes for the storing and re-transferring of oil remaining in vessels, when they arrive for docking. The system is complete with steam heating and pumping plant, and the arrangement is such that additional storage units can be added as required.

Sunderland Coal Trade.

The report of the Wear coal trade for the two months of this year contain some interesting details as to fluctuations between this year and last year.

	This Year's Shipments.	Last Year.
COAL.		
Germany	114,100	83,100
Netherlands	15,840	32,320
Belgium	13,701	7'190
France	107,100	94,900
Italy	24,500	41,465
Other Countries ...	107,087	125,435
London	325,350	323,850
Other Coast Ports ...	102,150	104,787
Total ...	809,828	813,047
BUNKERS		
Foreign Voyages ...	26,200	39,464
Coastwise Voyages ...	19,435	14,565
Gross Total ...	855,463	867,076
COKE.		
Italy	5,900	1,785
Other Countries ...	7,250	19,075
Total ...	13,150	20,860

Coal and Coke combined 2 per cent. decrease.

New Dredger for the Wear.

A contract for a new dredger for the Wear has been placed with Messrs. Priestman Bros., of Hull. The dredger is to be of the side discharging grab hopper type, and will be used for carrying up to 200 tons of large blocks of rock weighing up to five tons each, for pier work at the mouth of the river.

Meeting of the Hartlepools Chamber of Commerce.

At the annual meeting of the Hartlepools Chamber of Commerce, Ald. Charles Macfarlane, President, made a strong appeal for a progressive policy in connection with the port. He commented on the fluctuating character of the trade of the port during the past 60 years and observed that many trades had concentrated their activities at other ports. So far as the Hartlepools were concerned they could only do the best possible with the trade at their disposal. It was, however, vitally important that the status of the port should be maintained so far as the depth of water available was concerned. With ships increasing in draught, ports which did not provide the necessary depth of water would have to take secondary place.

Personalia.

One of the best known Tyneside shipbuilders was removed by the death of Sir James Readhead, Bt., of Westoe Hall, South Shields. He was the fourth son of the founder of the firm of John Readhead and Sons, Ltd., of West Docks, South Shields.

Alderman William Clough, of Gateshead, who for many years represented the town on the Tyne Port Sanitary Authority and Tyne Conservancy Board, died last month at the age of 78.

Mr. Alex. Cameron has been elected President of Sunderland Chamber of Commerce, in succession to Sir Walter Raine.

Aden Port Trust.

The returns for the month of February, 1930, of shipping using the Port of Aden are as follows:—

SHIPPING USING THE PORT.	No.	Tonnage
Merchant vessels over 200 tons	125	511,348
Merchants vessels under 200 tons	13	2,196
Government vessels	9	30,199
Dhows	57	2,005
PERIM.		
Merchant vessels over 200 tons	28	79,612

The total value of Imports excluding Government stores was Rs.55,72,000, as compared with Rs. 73,05,000 for February, 1929, and of Exports Rs.47,44,000 as compared with Rs.61,19,000.

The total value of both Imports and Exports together was Rs.103,16,000, as compared with Rs. 134,24,000 for the corresponding month last year.

Imports during the month were above those for February, 1929, in the case of grain, pulse and flour, hardware, sugar and private treasure; and below in the case of coffee, gums and resins, raw hides, seeds, raw skins, white and printed or dyed piece goods, twist and yarn, and unmanufactured and manufactured tobacco.

Exports were above those for February, 1929, in the case of gums and resins, raw skins, printed or dyed piece goods, unmanufactured tobacco, and private treasure; and below in the case of coffee, grain, pulse and flour, hardware, raw hides, seeds, sugar, grey and white piece goods, twist and yarn and manufactured tobacco.

TRADE OF THE PORT.

Article.	Unit.	Imports.		Exports.	
		Quantity.	Value Rs.	Quantity.	Value Rs.
Coal	Tons	88	1,986	0	0
Coffee	Cwts.	6,153	2,74,286	8,058	4,73,815
Grain, Pulse and Flour	,,	55,034	4,88,078	26,632	2,23,620
Gums and Resins	,,	4,160	91,737	5,986	1,42,311
Hardware	—	0	24,362	0	11,370
Hides, raw	No.	2,700	5,742	2,575	8,111
Oil, Fuel	Tons	26,348	7,90,440	0	0
,, Kerosene	Gls.	15,676	14,382	3,496	2,623
,, Petrol	,,	30,268	39,085	5,992	7,562
Salt	Tons	0	0	14,500	1,32,000
Seeds	Cwts.	812	9,670	1,333	18,310
Skins, raw	No.	260,140	2,15,425	533,485	7,00,988
Sugar	Cwts.	27,915	2,45,419	13,791	1,25,744
Textiles—					
Piece Goods, Grey	Yds.	4,575,650	9,99,376	3,467,902	7,72,800
,, ,, White	,,	602,754	1,82,840	178,870	1,02,084
,, ,, Printed or Dyed ...	,,	571,665	1,79,596	967,510	3,24,810
Twist and Yarn	Lbs.	248,680	1,78,533	223,242	1,77,445
Tobacco, Unmanufactured	,,	241,360	93,333	564,928	1,72,237
,, Manufactured	,,	21,728	24,959	17,024	17,173
Other Articles	No. of Pkges.	157,724	9,89,755	22,852	5,55,319
Treasure, Private	—	0	7,23,502	0	7,75,401
Total ...	—	—	55,72,506	—	47,43,723

The number of merchant vessels over 200 tons that used the Port in February, 1930, was 125, as compared with 114 in the corresponding month last year, and the total tonnage was 511,000 as compared with 458,000.

Excluding coal, salt, fuel oil and military and naval stores and transhipment cargo, the total tonnage of Imports in the month was 9,100 and of Exports 5,600, as compared with 8,500 and 7,300 respectively for the corresponding month last year.

Irish Harbour Matters.

Waterford Harbour Board and Great Southern Railway.

Deciding that it had jurisdiction in the case, the Railway Tribunal which sat in the City Hall, Dublin, on 26th March last, gave judgment in favour of the Waterford Harbour Board and the Borough Council of Waterford in their application to prevent the Great Southern Railways Co. from singling by lifting one pair of rails on the line between Fiddown Station, Co. Kilkenny and the terminus at Waterford City.

The case for the applicants was that the singling of the line would be prejudicial to the commercial interests of Waterford City and to the trade of the port, as compared with other ports and harbours to and from which traffic was carried on the company's railways.

The railway company declared its intention in January, 1929, to proceed with the singling of the line, and when it received notice from the Harbour Board and the Municipal Corporation that they would apply to the Tribunal to put a stop to the work, the Company claimed that the Tribunal had no jurisdiction to grant any of the relief asked for by the applicants.

Judge O'Brien announced that the Tribunal had come to the conclusion that it had jurisdiction that was called in question by the respondents, and decided in favour of the applicants.

Death of Dublin Shipbuilder.

Mr. George Bell, who succeeded his father in the well-known firm of Dublin shipbuilders of that name, died recently at the age of seventy years. The late Mr. Bell became Lloyd's agent in Dublin on the death of his father, and was well-known in shipping circles, but had taken little active part in the business for many years. He was not married. The head of the firm now is Major Hollway, a member of the Dublin Port and Docks Board.

Lairage at Dublin Docks.

At a meeting of the Dublin Port and Docks Board on 3rd April, a letter was received from the Irish Export and Import Freights Committee stating that, having considered the result of an interview with the Board's Chairman and Vice-Chairman, the Committee was satisfied that with a little tightening up of the lairage occupied by the shipping companies, sufficient space could be provided by the Port Board for lairage accommodation at the North Wall for the s.s. "Brussels." In the meantime the Committee was making other inquiries with a view to the solution of the difficulty.

Mr. McCullagh said that it should not go out that the Board had any interest in the lairage of the shipping companies. The Board had no control of the shipping companies' lairages.

The Chairman (Mr. McGloughlin) said that this really was a matter that concerned the shipping companies involved, and the evidence so far was that the lairage was required by them.

The letter was marked "noted."

More Rapid Discharge of Grain Cargoes.

Arrangements have now been made by which a standard of 600 tons of grain per day shall be discharged at Dublin and Belfast. This will be an increase of 150 tons in Dublin and 100 tons in Belfast. The rate of discharge at Cork, Limerick, Londonderry and Waterford is to be 300 tons per day. In the case of Cork this will be an advance of 50 tons and at the other ports an advance of 100 tons. This will mean a big saving to importers and shipowners.

The Port of New York.

Latest Data issued by the Bureau of Commerce.

Going Abroad?
Four out of Five Travellers choose the Port of New York.

DURING the year 1929, there were 1,119,399 passengers carried between the Port of New York and foreign ports. The travel through all other Atlantic and Gulf ports of the United States combined amounted to 251,912 passengers. The 1929 figures show a gain of 22,457 passengers through New York as compared to a decrease of 9,589 through all other Atlantic and Gulf ports combined. Round-trip travellers showed a gain of 44,102, the year 1929 over 1928. Immigrant and emigrant traffic declined 21,645 during the same period.

The popularity of the Port of New York as a point of arrival and departure for travel to all parts of the world is largely the result of the fine type of passenger steamer operating out of the port, the frequent sailings, and the lure of the metropolis itself. However, New Yorkers are confirmed travellers themselves, and contribute a high percentage of the total passenger traffic.

The State Department, at Washington, recently published the results of an analysis of 196,930 applications made for passports last year. Of this total 58,834 or approximately 30 per cent., gave their residence as New York City. New York State entire contributed 72,568, or 37 per cent., and New Jersey 15,033, or 8 per cent. Travellers from these two states within which the Port of New York lies, together, made up 45 per cent. of the total, according to the State Department analysis. It is not merely a coincidence that an analysis of the freight entering into the foreign commerce of the Port of New York showed identically the same per cent. to have been originated in or destined to the Port of New York district.

With 45 per cent. of the ocean freight and 45 per cent. of the foreign travellers to be found within a convenient radius of the Port of New York, it is not surprising that steamship companies are eager to concentrate here their finest services. Those who are interested in developing a vigorous United States merchant marine may well consider the advantages of building up strong American lines at a point where such a tremendous reservoir of passenger and freight traffic may be tapped rather than scattering subsidised services among outports in accordance with local sentiment.

Number of passengers carried between New York and foreign ports:—

Arrivals:	Year ending Dec. 31st, 1928 Port of New York.	Year ending Dec. 31st, 1928 All Other Atlantic and Gulf Ports.	Year ending Dec. 31st., 1929 Port of New York.	Year ending Dec. 31st., 1929 All Other Atlantic and Gulf Ports.
Aliens—				
Immigrant ...	155,790	12,744	158,056	14,687
Non-immigrant ...	137,301	26,403	145,506	21,176
U.S. Citizens ...	304,490	102,145	328,368	105,442
Totals ...	597,581	141,292	631,930	141,305
Departures:				
Aliens—				
Emigrant ...	58,594	6,379	34,683	3,843
Non-emigrant ...	123,848	19,992	132,507	20,614
U.S. Citizens ...	316,919	93,838	320,279	86,150
Totals ...	499,361	120,209	487,469	110,607
Total Arrivals and Departures	1,096,942	261,501	1,119,399	251,912

Heavy Domestic Travel by Ship from the Port of New York.

The water-borne passenger traffic of the Port of New York is not confined to travel to and from foreign ports. Through the courtesy of the individual steamship lines, we are able to report for the year 1929 a total of 1,190,582 passengers using shipping services to and from domestic ports. This total includes travellers via Long Island Sound to New England; via coastwise lines to Norfolk, Charleston, Savannah, Jacksonville, Miami, New Orleans and Galveston; via the Panama Canal to Pacific Coast ports, and via the Hudson River to Albany, Troy and beyond. One day, round-trip, excursion passengers, which would greatly swell this total, are not included.

Value of Foreign Commerce at the Port of New York.

Reports from the local office of the Department of Commerce show a continued downward trend in the foreign trade of the country, which, however, is reflected less at the Port of New York than for the United States as a whole. The decline for the United States during January, as compared with January of last year, was 15 per cent., while that of New York was 11 per cent.

Exports at New York were $158,679,000 as against $176,481,000 for January a year ago, a drop of 10 per cent. The imports amounted to $152,812,000 in comparison with $171,501,000 in January, 1929, representing a decline of 11 per cent.

The foreign trade values of 1928 and 1929 at New York in comparison with competing ports, are as follows:—

	1929.	1928.	Net Change. Dollars.	Per cent.
New York ...	4,056,434,276	3,719,961,000	+366,472,311	+ 9.0
New Orleans ...	593,027,679	587,620,176	+ 5,407,503	+ 0.9
Philadelphia ...	367,479,231	304,115,867	+ 63,363,364	+20.8
Baltimore ...	200,800,022	208,999,869	— 8,199,847	— 3.9

Commerce of Port Newark.

During February, 1930, there moved into the Port Newark Section of the Port of New York District 6,500 short tons of general cargo and 16,230,000 board feet of lumber. Both groups showed decreases from the level which they held in February, 1929, when 7,340 short tons of general cargo and 24,674,000 board feet of lumber were received. The number of steamers, lighters and barges employed in bringing in the above tonnage was 30 in both years.

Grain Exports.

The continued decline in exports of grain from the entire United States was reflected in the foreign shipments at the Port of New York during January, but in lesser degree. Exports of both domestic and Canadian grain out of all ports of the United States dropped 64 per cent., while the decline at New York was 59 per cent. as compared with January, 1929.

A substantial drop in shipments of Canadian oats and barley is mainly responsible for the 4,000,000 bushel decline in transit grain.

Through the Port of N.Y.	January 1929 (Bushels).	1930 (Bushels).	Net Change Bushels.	Per cent.
Domestic Grain ...	1,493,000	717,000	— 776,000	—52.0
Canadian Grain ...	6,692,000	2,648,000	— 4,044,000	—60.4
Total ...	8,185,000	3,365,000	— 4,820,000	—58.9
Through all U.S. Ports.				
Domestic Grain ...	18,442,000	8,549,000	— 9,893,000	—53.6
Canadian Grain ...	13,886,000	3,135,000	—10,751,000	—77.4
Total ...	32,328,000	11,684,000	—20,644,000	—63.9

Vessel Movements in Foreign Trade.

Vessel movements in and out of the Port of New York during February were less than during the same month of the past year.

	February, 1930. No. Vessels.	Vessel Tonnage.	February, 1929. No. Vessels.	Vessel Tonnage.
Entrances ...	515	2,329,854	536	2,353,890
Clearances ...	527	2,308,283	553	2,401,075

Steamship Sailings.

Compared to a year ago, regularly scheduled steamship sailings from the Port of New York to foreign ports showed an increase of 27 for the month of January, 1930, and a decrease of 12 for February, 1930. The January increase was found in sailings to West Coast of South America, India, French Atlantic and Canadian Atlantic ports.

In February, 1930, direct foreign sailings totalled 390, or 12 sailings less than the same month in 1929. Most of this decline was in sailings to United Kingdom, Caribbean-Mexican and China-Japan-Dutch East Indies ports.

The peak day for January was Saturday, the 25th, with a total of 94 sailings. Of these 54 were in foreign service, and included 15 to Caribbean-Mexican ports, 12 to north European ports, 4 foreign cruises and 3 tankers. The 40 domestic sailings included 10 to South Atlantic and Gulf ports, 4 tankers and 4 coal carriers.

For February the peak day was Saturday, the 8th, with a total of 86 sailings. Foreign service accounted for 41 of these, including 8 to the United Kingdom, 15 to Caribbean-Mexican ports and 1 tanker. The 45 domestic sailings included 4 to the Pacific Coast, 4 tankers and 4 coal carriers.

New Speed Records.

The " Mauretania " established a new record for the run to Havana and return, making the south-bound passage in less than 48 hours and the north-bound passage in 44 hours-and-a-half.

That the Port of New York is well equipped for rapid ship repair work was again shown by the experience of the Holland-America Liner " Veendam," which arrived at New York on February 7th badly buffeted by the storm she encountered at sea January 30th. A force of 200 engineers, fitters and other repair men began work as soon as the ship had arrived at her pier. The repairs to her plates and superstructure were completed in 60 hours while the ship continued to discharge

The Port of New York—continued.

6,300 tons of cargo. Fully repaired and equipped, the "Veendam" sailed Tuesday, February 11th, for a West Indies cruise with 300 tourists.

New records for prompt docking and dicharge of passengers seem to have been set by the North German Lloyd steamer, "Berlin," on February 23rd. Leaving quarantine at 3.36 p.m. the "Berlin" docked at her South Brooklyn pier at 3.54 p.m. By 4 o'clock most of the passengers were ashore.

New Ship Construction.

The first of the Ward Line's turbo-electric liners, the "Morro Castle," was launched March 5th. She and her sister ship, the "Oriente," of 11,300 tons gross register each, will be ready for service in the fall.

The first two vessels which are under construction by the New York Shipbuilding Corporation, Camden, N.J., for the American Export Line, will be launched in June. They will be named the "Excalibur" and the "Exochorda," each of 8,200 tons gross weight.

The Furness-Bermuda Line announces a contract about to be placed for a fast turbo-electric liner for the New York to Bermuda service. This vessel, of 23,000 gross tons, will be called the "Empire State."

The United States Line announces that the second class accommodation of the "Leviathan" is being converted into accommodation for 300 tourist cabin passengers. A new night club, to be known as the Club Leviathan, is being installed in the space formerly occupied by the Palm Garden.

The United States Line has completed its plans for construction of two new super-liners to alternate with the "Leviathan" in the New York-Southampton run. These vessels will be 962-ft. long with a gross tonnage of 50,000. They will be built for a speed of 28½ knots, with provision for a catapault to permit ship to shore airplane service. The award by the Post Office Department of a mail contract under the Jone-White Act insures a prompt start in the construction of these liners. The contract provides that the liners must be constructed within 4 years.

New Pier Construction Authorised.

Controller Berry, of the City of New York, was authorised by the Board of Estimate and Apportionment to acquire Pier 32, North River, by condemnation. The City authorities and the Hudson River Night Line, who owned the pier, have been unable to agree on price. It is planned to construct a new 1,100-ft. pier for the use of super liners.

News of the Western Ports.

Ribble Dock Undertaking.

IT was stated at the Preston Town Council that the average deficiency on the Ribble Dock undertaking was £33,735 and in accordance with a decision to stabilise the rate allocated, a sum of £35,000 had been budgetted for. The capital expenditure on the Ribble undertaking was £1,862,139 and the debt outstanding was £1,193,465. The Chairman of the Finance Committee said it was satisfactory to note that the traffic on the Ribble was well maintained. Owing to the Baltic ports becoming open and free from ice earlier than usual, boats had been enabled to leave and traffic was arriving with wood pulp and timber that belonged normally to later in the year.

More Developments at Fleetwood.

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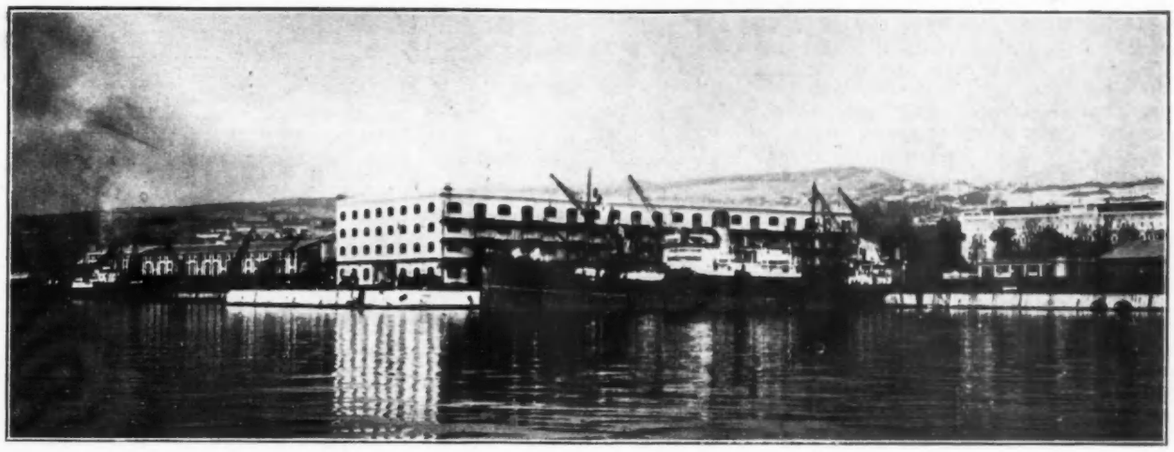

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	Coals Tons.	Phosphates Tons.	Cereals Tons.	Cotton Tons.
Genoa	473,907	35,115	100,978	33,029
Savona	253,356	2,215	1,375	—
Leghorn	177,814	15,925	7,034	392
Civitavecchia ...	148,207	2,484	7,388	24
Naples	150,444	500	18,983	3,764
Palermo	108,065	—	5,148	—
Catania	16,165	—	5,191	—
*Trieste	647,850	—	169,500	63,165
Fiume	17,656	22,654	—	—
Venice	196,941	19,283	17,041	10,113
Ancona	84,541	13,593	5,688	25
Bari	14,082	—	1,633	—

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In connection with the above figures, it is interesting to point out that a larger quantity of cereals were imported at Civitavecchia than at Leghorn, although this port is fitted with large grain elevators and Civitavecchia has one under construction, but this fact confirms the growing importance of this port for trade with Central Italy.

Statistics concerning details of shipping at the various Italian ports for the first period of 1930 are now available, and according to this, shipping at Genoa during January, 1930, included the arrival of 876 ships representing 1,669,100 net register tons with 655,789 tons of goods, and the clearance of 348 ships totalling 813,450 net register tons with 149,999 tons of goods. Among the goods imported there were: Coal, 311,034 tons; cereals, 48,866 tons; cotton, 16,235 tons; wool, 6,695 tons; skins, 1,831 tons; phosphates, 14,330 tons; oil, 16,905 tons; frozen meat, 2,775 tons; lumber, 12,079 tons; and general cargo, 124,075 tons.

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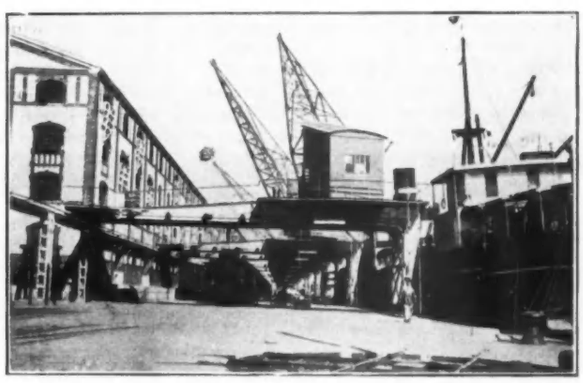
Trade at Trieste during the first two months of 1930 reached 3,627,313 centals by rail and 4,405,392 centals by sea, which means a total of 8,032,705 centals, showing no alteration in regard to the corresponding period of 1929. According to the report which has been issued by the Società Anonima della Zona Industriale del Porto di Trieste, applications have been made for space in this zone by several Italian and foreign industries, so that it may be expected that the industrial zone in the harbour of Trieste is very soon to be an accomplished fact. Interest is shown by German and Dutch Lines from the Dutch East Indies to call at Trieste, while large Trieste liners such as the "Saturnia" and the "Vulcania," of the Cosulich Line, and the t.s.s. "Gange" (12,000 tons) of the Lloyd Triestino are scheduled on pleasure cruises from Easter up to June, particularly in the Mediterranean. Shipments to the Belgian Congo are rather active, and the Navigazione Libera Triestina is daily increasing its activities to gain new trade particularly from Central Europe, though matters are bad regarding Indian trade, as recently one or two ships had to leave Calcutta for Italy practically in ballast, and were sent to load phosphates at Kosseir; and the growing competition of Russian Black Sea lumber on the Mediterranean markets has practically caused the disappearance of the shipments of lumber from Adriatic ports. Recently some shipments have been loaded for North Europe on Cunard Anchor Line steamers, for Red Sea ports on ships of the Società Veneziana di Navigazione a Vapore, while new important shipments of sugar from Hungary have appeared at Fiume.



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	1930	1929	1930	1929	1930	1929
Arrivals ...	201,436	221,744	171,718	137,506	373,154	359,250
Clearances ..	50,203	32,237	29,208	31,691	79,411	63,928
					452,565	423,178

It can be seen from these figures that shipping during the period in question has shown an increase at Venice, and in this connection it should be noted that while the imports of cereals continue to show a decrease the imports of coal have shown an increase. Among the goods exported during January, there has been a noteworthy quantity of pyrite ashes, while during February pyrite ashes exports have shown a decrease.

The Port of New York—continued.

6,300 tons of cargo. Fully repaired and equipped, the "Veendam" sailed Tuesday, February 11th, for a West Indies cruise with 300 tourists.

New records for prompt docking and dicharge of passengers seem to have been set by the North German Lloyd steamer, "Berlin," on February 23rd. Leaving quarantine at 3.36 p.m. the "Berlin" docked at her South Brooklyn pier at 3.54 p.m. By 4 o'clock most of the passengers were ashore.

New Ship Construction.

The first of the Ward Line's turbo-electric liners, the "Morro Castle," was launched March 5th. She and her sister ship, the "Oriente," of 11,300 tons gross register each, will be ready for service in the fall.

The first two vessels which are under construction by the New York Shipbuilding Corporation, Camden, N.J., for the American Export Line, will be launched in June. They will be named the "Excalibur" and the "Exochorda," each of 8,200 tons gross weight.

The Furness-Bermuda Line announces a contract about to be placed for a fast turbo-electric liner for the New York to Bermuda service. This vessel, of 23,000 gross tons, will be called the "Empire State."

The United States Line announces that the second class accommodation of the "Leviathan" is being converted into accommodation for 300 tourist cabin passengers. A new night club, to be known as the Club Leviathan, is being installed in the space formerly occupied by the Palm Garden.

The United States Line has completed its plans for construction of two new super-liners to alternate with the "Leviathan" in the New York-Southampton run. These vessels will be 962-ft. long with a gross tonnage of 50,000. They will be built for a speed of 28½ knots, with provision for a catapault to permit ship to shore airplane service. The award by the Post Office Department of a mail contract under the Jone-White Act insures a prompt start in the construction of these liners. The contract provides that the liners must be constructed within 4 years.

New Pier Construction Authorised.

Controller Berry, of the City of New York, was authorised by the Board of Estimate and Apportionment to acquire Pier 32, North River, by condemnation. The City authorities and the Hudson River Night Line, who owned the pier, have been unable to agree on price. It is planned to construct a new 1,100-ft. pier for the use of super liners.

News of the Western Ports.

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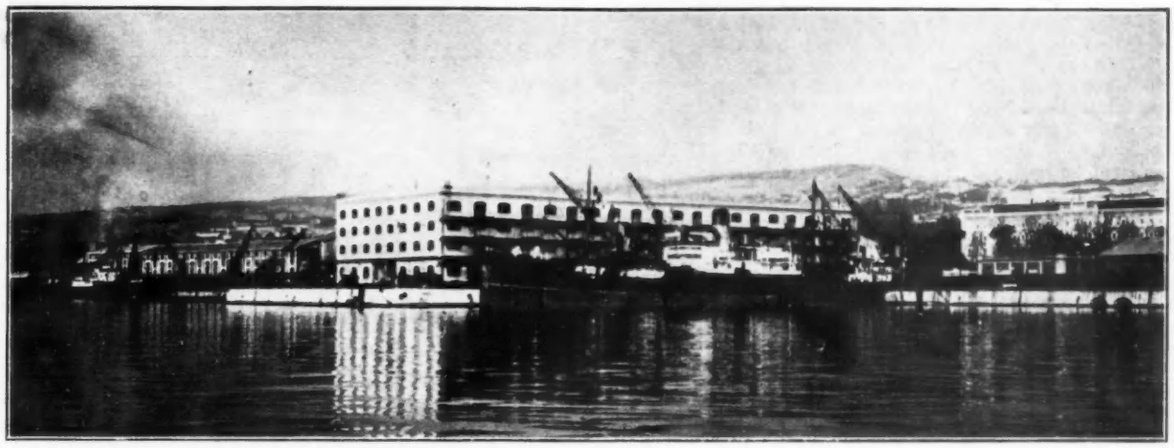

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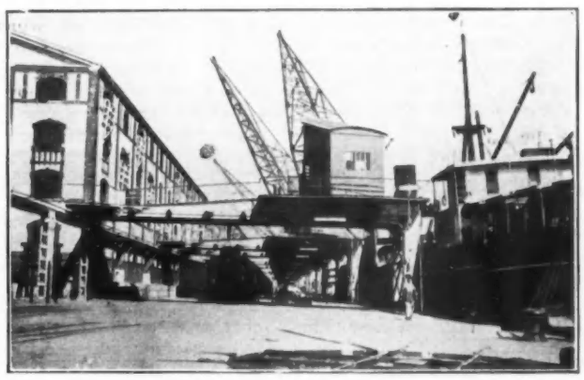

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Italian Harbour Affairs—continued.

A striking item in connection with the development of shipping at Venice undoubtedly is the announcement of the erection of the new calcium carbide and manganese iron industries at the Marghera Docks in the port of Venice. It is estimated that these new industries may cause an increase of about 300,000 tons yearly in goods unloaded and shipped at Venice.

Statistics concerning shipping at Fiume during the first part of this year have not been published yet. The contract for the new harbour enlargement works has been given to the Società Fiumana Lavori Portuali. As already stated in the article on the port of Fiume which appeared in the February issue of *The Dock and Harbour Authority*, at first the Riva Duca degli Abruzzi will be enlarged, and six electric cranes will be provided; then the Cagni breakwater will be terminated, and finally the new lumber dock will be built. The decree of March 17th creating the free zone of Fiume has been published. The Ministry of Finance is authorized to limit the import of certain goods beyond the requirements of the population, in order to avoid excessive stocks being created there with the object of smuggling them into the territory of the Kingdom of Italy subject to the Custom's supervision, and permits to erect new industries in the free zone of Fiume must be obtained from time to time from the Italian Government. It is announced that statements have been made from Rome to the effect that should any foreign industry desire to establish its activity in the free zone, and provided that this industry is not a duplication of industries already existing in Italy, the Italian Government is ready to guarantee that whatever may be the period during which the free zone will be maintained in force at Fiume, the privilege to import raw materials necessary to the new industries will be maintained during the whole period of the existence of the industry itself.

Efforts are being made to increase the transit trade through Adriatic ports of trade between British India and Central Europe. The Società Veneziana di Navigazione a Vapore, which this year has enlarged its services to Calcutta with the extension to Rangoon, has published in its annual report the following schedule in connection with the exports from Italian ports to British India, which have shown during 1929 an increase in respect to 1928:—

	1925 Tons	1926 Tons	1927 Tons	1928 Tons	1929 Tons
Venice	3,470	4,184	3,607	2,897	1,848
Trieste	17,893	22,059	19,524	22,259	25,533
Fiume	9,668	25,247	11,351	9,255	17,229
Genoa	3 053	4,791	2,644	1,702	3,656
Leghorn	3,192	3,187	2,032	1,552	2,054
Naples	908	965	605	758	1,368
Catania	3,500	5,224	4,158	4,665	6,371
Licata	—	2,640	5,621	1,311	1.953
Porto Empedocle, etc., etc.	—	507	4,292	1,220	3,771
Totals ...	41,684	68,804	53,834	45,619	63,783

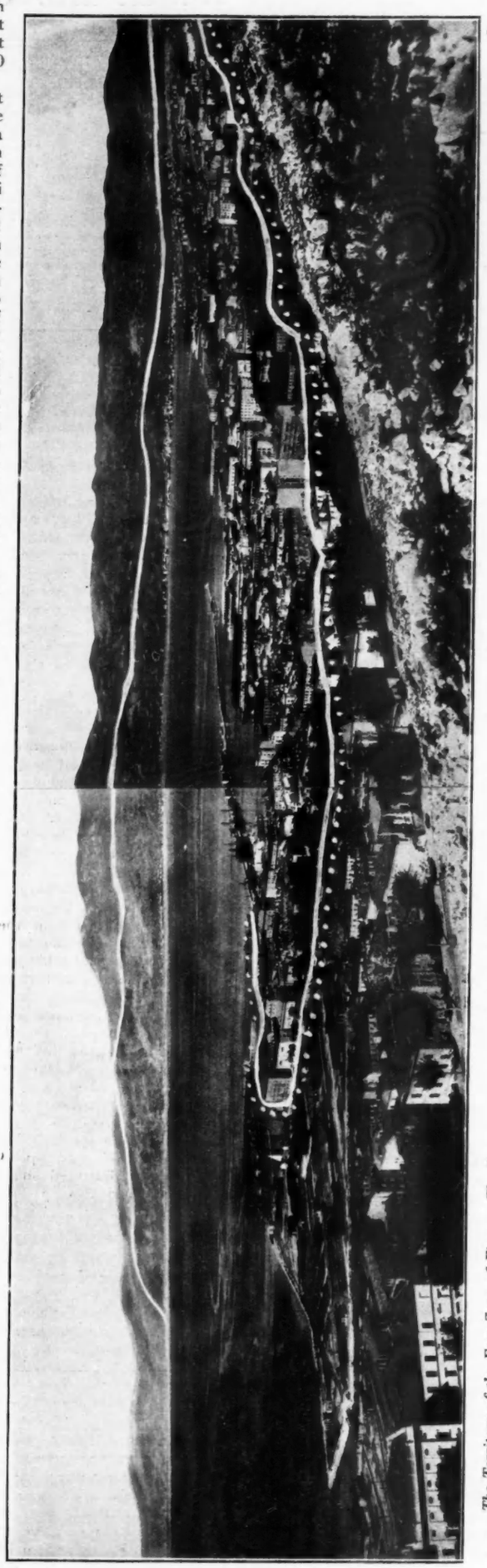
It is expected that things will greatly improve when the four 8,000 tons cargo motor liners with a speed of 13 knots per hour are put on the Italy-Calcutta-Rangoon service to which these figures refer. However, during the period from March 26th to May 31st (about two months) there are scheduled from Genoa for British India and the Far East 28 ships, among which there are 12 Dutch ships, 10 German ships, 6 Italian ships and no British.

In connection with foreign transit trade through Genoa it is understood that the Swiss export trade is being concentrated on a special concrete warehouse on the Calata San Lazzarino, and it has been possible to start loading direct from railway cars arriving alongside the quay into ships, which has meant important reductions in loading charges, and reduction of expenses in general since the use of barges is being discontinued as far as possible.

Further projects regarding a new railway connecting Genoa with its foreign hinterland have been prepared, and among them there is one connecting Genoa with Borgotaro and Parma, and Parma to Verona, which is the shortest route between Genoa and Southern Germany, but it does not appear that the Government has taken any decision as yet, since the whole Brennero railway must first be electrified before trade can be increased on that line. Another project has been presented to the authorities for the connection of Massa Carrara near Spezia to Reggio Emilia through Fivizzano, and Reggio with Verona.

Two new electric coal elevators built at the Stabilimento Tecnico Triestino have been put into operation at Naples, while new electric cranes built at Padova have been put into operation at Cagliari.

Much interest is shown, after the signature of the Italo-Roumanian Treaty of Commerce, about the development of trade relations between the two countries, and from the Roumanian side it has been suggested that a larger maritime co-operation should exist between the two countries and that a committee of Italian harbour experts should visit Roumanian ports.



The Territory of the Free Zone of Fiume. The line ——— marked West from the Town shows the Boundary of the Free Zone towards Italy, and the line . . . . . marked East from the Town represents the Boundary towards Jugoslavia.

Hull and the Humber.

Purchase of Queen's Dock, Hull.

THE proposals for the purchase of the Queen's Dock at Hull by the Corporation from its present owners, the London and North-Eastern Railway Company, for the sum of £117,000 have now been approved by Parliament. It now remains for the preliminary plans to be settled and a commencement of the dock to be made. In the course of three or four years the dock, which has served shipping for upwards of 150 years will be no more and a fine open square flanked at least on one side by imposing public buildings will have taken its place. The disappearance of this dock will mean a certain amount of dislocation and inconvenience to shipping and traders now using it. The Chamber of Commerce and Shipping has therefore been active in seeking to safeguard those interests and to impress upon the London and North-Eastern Railway Company the urgent necessity for providing alternative accommodation, and in particular the completion of the King George Dock by the construction of another "arm" which would increase the water area of the dock from 53 to 85 acres. With this object in view a petition against the Bill was presented to Parliament. In the meantime, however, a deputation met Sir Ralph Wedgewood, Chief General Manager of the L. & N.E.R. Co. following which the Chamber, in view of the likelihood of satisfactory assurances and terms being obtained, decided to withdraw the petition to the House of Commons without prejudice to the Chamber's interests and to reserve their opposition to the Bill for the House of Lords. It is, however, understood that all outstanding matters have been amicably adjusted and that only the Royal Assent remains to be given to the Bill for it to become law, together with other proposals to continue without specified date the existing scales of dock dues and charges which now stand at 60 per cent. above those levied in 1913.

Meeting of the Humber Conservancy Board.

At the March meeting of the Humber Conservancy Board the Pilotage Committee reported that they had been asked by the Buck Steam Shipping and Coal Exports, Ltd., for a ruling on the question of the compulsory pilotage of ships engaged in voyages between coastwise ports. The committee's reply was that the byelaw exempts a ship trading coastwise (if not carrying passengers), not exceeding 600 tons gross tonnage and that the Act provides that a ship which habitually trades to and from any port or ports outside the British Isles shall not be deemed to be trading coastwise by reason only that she is for the time being engaged on a voyage between ports in the British Isles. Any case of doubt, as it arises would, therefore, have to be considered on its merits in relation to the law on the point. The Board felt that it was impracticable for them to lay down any general ruling.

The question of "appropriated pilots" raised at a previous meeting by Mr. W. M. Good with the support of Mr. W. H. Hutchinson was the subject of a further report. Pilots had been appropriated to the Australian Commonwealth line of steamers since they were taken over by the Aberdeen and Commonwealth line, and also to vessels chartered by that line. A similar procedure had also been observed in relation to the Peninsular and Oriental Steam Navigation Company. The Pilotage Committee had construed the bye-law affecting appropriated pilots as not being applicable to the chartered ships. Upon reconsideration the committee re-affirmed this decision which was now confirmed by the Board without further challenge.

Maintaining the Navigable Channel of Humber Estuary.

Some extremely interesting, though perhaps rather technical particulars concerning the Humber Estuary and the efforts to maintain the navigable channel are contained in the annual report presented to the Humber Conservancy Commissioners by their engineer (Mr. Arthur E. Butterfield). From this it appears that the river above Hull has remained fairly stable; that the width of the navigable channel has been practically equal to the normal whilst the depth has been above the average. The channel has remained regular and constant. The river below Hull, says Captain Butterfield, is very good, the channel having been constant, the minimum depth much above the average and the width regular and above the normal. From Saltend to Paull the channel maintains its average width, but from Paull it regularly increases. The channel, Hull to Saltend, varies from 600-ft. to 1,360-ft. in width, the former width occurring between the Victoria Dock entrance and the Old Harbour and the latter off Saltend. The governing depth between Hull and Immingham is 28-ft., which is considered quite good, being 5-ft. better than the normal and similar to what it was in 1927. The 10-fathom "deep" off North Killingholme Haven has not re-appeared. This makes only the fourth time in 78 years that this "deep" has been non-existent. The available depth across the Hull middle sand shoal for ferry traffic at the date of the survey, was 5-ft. at L.W.O.S.T., but slightly better water could be obtained by navigating to the westward of New Holland pier.

The quantity of material deposited on Skilter Ness during 1929 amounted to 4,850,315 tons, of which 116,205 tons were from Earle's Shipbuilding and Engineering Company, and the remainder from the London and North-Eastern Railway Company. Despite the deposit of this large quantity of spoil the area under consideration eroded during the past year to an extent equivalent to 175,200 tons. Calculations of the cubical contents of the deposit ground since 1902 show that whilst 107¼ million tons have been deposited, in the interval, accretion has only occurred to the extent of less than one million tons. Since 1907, 16,652,287 tons of material have been deposited on the Foul Holme deposit ground, which has accreted to the extent of 29⅛ million tons since that date. Since 1919 the denudation of the Burcom deposit ground has been equivalent to 401,184 tons despite the equivalent of nearly 6½ million tons of spoil. The quantity of sand removed from the River Humber under licence last year was 52,739 tons of which 47,723 tons were taken by the L. & N.E.R. for the filling up of timber ponds; and 1,615 tons of gravel were taken from the banks at Spurn.

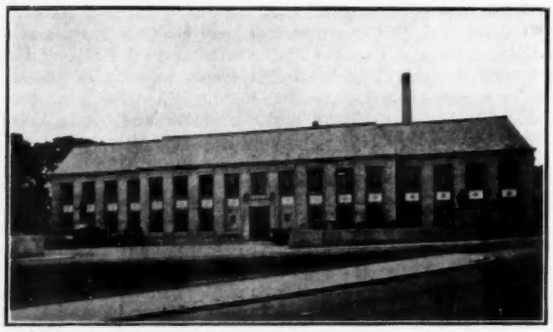
Proposed Tunnel or Bridge for the Humber.

The report of Sir Douglas Fox and Partners, who were appointed to recommend a scheme for the linking up of Hull with North Lincolnshire by a tunnel under or bridge over the River Humber has been made public and has created a considerable amount of interest. As already reported the experts do not favour a tunnel, but the more economical and less expensive scheme of a road bridge at an estimated cost of £1,750,000. In their report Sir Douglas Fox and Partners state that the best site for the bridge would be the South of Hessle (two miles from Hull) for there the disturbance to navigation would be avoided. A bridge in that position would be considerably cheaper than one on any alternative site. The bridge would be carried on an embankment crossing the railway with a span of 100-ft. at a height of 45-ft. The road will then be continued to the river bank on a viaduct with spans of 40-ft. and 70-ft. on concrete piers and have one principal span which will be of cantilever type. A special feature is that the central span of the bridge would be sufficiently high to permit of shipping passing on the river to and from Goole and do so without the slightest difficulty. In order to avoid interference with navigation the consulting engineers propose that the bridge should cross all navigation courses used for the last 30 years in a single span of 900-ft. As far as they can judge the depth of the channel has been substantially maintained across the whole breadth of the 900-ft. waterway for the last 30 years so that any part is available as a navigable waterway. At high water on spring tides there will be a clear height of 90-ft. throughout the 900-ft. span and for 250-ft. on either side of it. This allowance is 15-ft. more than on the Manchester Ship Canal and 6-ft. more than under the new Tyne bridge. The aggregate width of the piers is equal to only about 5 per cent. of the waterway. They, therefore, offer no appreciable obstruction to flow and will have no significant effect on the configuration of the river bed, nor on the channel to the Hull Docks, the upper end of which is two miles down-stream. Although consideration is due to the reasonable claims of navigation, the importance of river craft must, the report says, be assessed by comparison with that of the very large road traffic which will use the bridge. In the view of the consulting engineers the design should cause no apprehension on the part of the shipping interests that navigation of the river will be disturbed. It may be added that the length of the bridge from foreshore to foreshore is to be 6,400-ft. and that the total distance from Hessle to Barrow Road via the bridge would be 3¼ miles. The bridge will be 36-ft. wide, accommodating four lines of road traffic. A railway is not contemplated. The report is now under consideration by the executive committee appointed by the various local authorities on either bank of the Humber and there seems a reasonable probability that financial assistance may be forthcoming from the Government under its schemes for providing employment. The engineers state that the work could be started within three months and the bridge and its approaches completed in three years.

Sand Lime Bricks.

Progress in Great Britain with an Important Process.

Of great interest is the calcium-silicate or sand-lime brick process, which gives extremely high-grade bricks, superior to the ordinary burnt clay product, having the advantage for dock buildings that each brick is a "facing" brick, dead straight at the edges, so that the minimum amount of mortar is required, while the resistance to weathering, and to water penetration, are also strong points.



Research Laboratories, Messrs. Brunner, Mond & Co., Ltd., Northwich. Sutcliffe Speakman Brick Plants.

Sand (silica) is used very largely for the purpose and at the present time the world output is over 5,000,000,000 sand-lime or calcium-silicate bricks per annum, chiefly in Germany, the United States, and Canada, the process having been introduced in 1894. One of the pioneers, however, is a British engineer, E. R. Sutcliffe, and Messrs. Sutcliffe Speakman and Co. Ltd., of Leigh, Lancashire, have long specialised in the manufacture of sand lime brick equipment, whilst they have supplied plants all over the world and more than 12 of their installations are now running in Great Britain, having a total capacity of 40,000,000-50,000,000 bricks per annum.

The general principle consists in mixing intimately ordinary good grade sand with about 5-10 per cent. of the weight of finely powdered slaked lime which must contain no trace of quicklime, compressing the mixture into brick shapes in an automatic brick-moulding machine or press, and then heating the shapes in a closed high pressure steel cylinder or autoclave into which steam is blown, giving an intensely hard brick which is ready for use almost immediately.

As typical of the conditions, which are, however, varied according to circumstances, the quicklime is ground equivalent to all through a 50-mesh screen, mixed with sand in the proportion of 5-10 per cent., as already stated, and allowed to lie for 12-24 hours in a silo, so that the natural moisture in the sand completely slakes the finely divided lime. The mixture is then fed to a second grinding mill, mixed with a little water, and passed through a powerful "Emperor" brick press, operating at 2 tons per square inch pressure, say 90-100 tons per brick, turning out in the standard size 40 brick shapes per minute, while a larger and more powerful machine has now also been introduced turning out 3,300 bricks per hour. The shapes are stacked on small wheeled trolleys, each of which holds 300 bricks and 12 trolleys one behind the other (that is 3,600 bricks) are run into a long steel autoclave which operates for example in one plant at 165-lbs. per square inch, corresponding to a temperature of about 370 degs. F. The time required in this case is only four hours, and the train load of 3,600 bricks is then run out, being ready for use almost immediately while a much lower steam pressure can be used, the only difference being that a longer time of heating is required.

The chemical reaction is that the lime combines with part of the sand (silica) or unsaturated silicates, to give calcium silicates which binds the whole brick together in an intensely hard mass, and on the same lines ash and clinker and blast furnace slag can be used instead of sand, no steam pressure then being necessary, merely the use of exhaust steam in a long tunnel.

Lloyd's Register Shipbuilding Returns.

Statistics for the Quarter ended 31st March, 1930.

The statistics issued by Lloyd's Register of Shipping regarding vessels under construction at the end of March show that in Great Britain and Ireland there is an increase of 54,739 tons in the work in hand as compared with the figures for last December, and that the present total—1,614,993 tons—is 257,618 tons greater than the tonnage which was being built at the end of March, 1929.

About 92,000 tons of the tonnage now in hand in this country are intended for the British Dominions; about 295,000 tons for Norway; and about 255,000 tons are for other foreign shipowners or for sale.

The tonnage now under construction abroad—1,650,936 tons—is 100,310 tons greater than the work which was in hand at the end of December, 1929.

Five countries abroad have more than 150,000 tons under construction, viz.:—German, 231,162 tons; United States 222,974 tons; France, 182,930 tons; Holland, 178,683 tons; and Japan, 167,055 tons.

The total tonnage under construction in the world amounts to 3,265,929 tons, of which 49.4 per cent. is building in Great Britain and Ireland, and 50.6 per cent. abroad. The average percentages in the last twelve months before the war were 57.2 for Great Britain and Ireland and 42.8 for abroad.

In Great Britain and Ireland 426,570 tons were commenced—a decrease of about 72,000 tons over the similar figures for the December quarter; and 344,699 tons were launched—a decrease of about 128,000 tons. Similar figures for abroad are 430,231 tons commenced, and 308,184 tons launched.

A large increase as compared with the previous quarter is shown in the tanker tonnage under construction, the present figures being 122 vessels of 886,884 tons, of which 77 vessels of 558,778 tons are being built in Great Britan and Ireland, and 9 vessels of 84,745 tons in Germany. It is of interest to note that of the 122 tankers under construction, 104 are motorships.

The tanker tonnage now building represents over 27 per cent. of the total steam and motor tonnage under construction in the world.

The tonnage of motorships under construction in Great Britain and Ireland (876,960 tons) exceeds, for the first time, the tonnage of steamers building (736,033 tons), while the motorship tonnage being constructed abroad (1,054,402 tons), is nearly 85 per cent. greater than the tonnage of steamers.

The continued progress in the employment of the internal combustion engine for the larger vessels is indicated by the fact that while there are now building in the world 91 motorships each of 8,000 tons and upwards, only 30 steamers of such size are under construction. These figures include 12 motorships and 8 steamers each of 15,000 tons and upwards.

The table respecting marine engines shows that the indicated horse-power of steam engines now building or being fitted on board amounts to about 1,159,000 horse-power, while the figures for oil engines aggregate about 1,560,000 horse-power. The figures for steam engines include 65 sets of turbine engines of about 652,000 shaft horse-power, giving an average of 10,000 horse-power per set.

Tonnage to Lloyd's Register Class.—The pre-eminent position which Lloyd's Register retains amongst the Classification Societies of the world is demonstrated by the fact that the tonnage actually under construction throughout the world under the inspection of Lloyd's Register reaches 2,070,583 tons, of which 1,298,088 tons are being built in Great Britain and Ireland.

Ceylon and Indian Notes.

The Port of Galle.

THE setback experienced in 1928 in the matter of steamers calling at the Port of Galle continues, and again there was a drop in the number of arrivals, though not to any appreciable extent during 1929. According to the statistics prepared, the total number of foreign-going steamers and sailing vessels, besides the round-the-island native boats which put into Galle, was 90. If sailing vessels and native boats were removed from this total, the number of steamers would remain at 78, a drop of 11 as compared with 1928.

There are only a few lines of steamers calling at Galle. The "Clans" go there regularly for produce, while the "Asiatic" and "Jala" boats call solely for the purpose of discharging rice and sundries. The B.I. sends only one ship, and that the "Lady" boat, which does not, as a rule remain for more than a few hours. The "Clans" are the ships that really do the actual shipping at this port. They come practically empty and go away with all the available produce. In spite of the reduced scale of charges for stern moorings introduced last year, the re-opening of coaling sheds, and other facilities, including the provision of a passenger landing jetty, there was no new line calling there.

The port during the last year was honoured with an official visit by a unit of the Royal Navy when H.M.S. "Emerald" called there and entertained a party to tea. A start was made during the year with the survey of the harbour, but it is understood that only soundings were taken before the vote on that head was exhausted. The survey has yet to be made and a dangerous rock removed. There were no accidents of any serious nature, but the South-West Monsoon was responsible for much damage to the fleet of cargo lighters. There was only one fatality and that of a coal coolie who dropped into the hatch and was killed.

A Steam Launch.

The Port of Galle will shortly be provided with a steam launch—a powerful one that would be capable of even going out of the port and escorting vessels into the harbour. This will be used by the pilot, and the *katamaran* done away with.

There is also the probability of the harbour section being made a separate department during the coming year, which would mean the appointment of an officer as Master-Attendant, Galle. At present, Mr. P. Flood, the pilot, is the Assistant Master-Attendant, and whatever is needed reference has to be made first to the Master-Attendant, Colombo.

A remarkable feature during 1929 was the increase under the heading of revenue. This result is surprising when it has to be considered that there was a decrease in the number of steamers calling. According to statistics, the total revenue collected, from January 1st to December 29th, amounted to Rs.927,132, as against Rs.889,398, the previous year—an increase of Rs.37,734. The features of imports were grain and poonac. The total under this head was Rs.72,010, as against Rs.67,272. In this connection it is interesting to note that the chief items of export were cocoanut oil, copra, rubber and tea. The increase in revenue is a healthy sign and better results are expected this year.

Trading in Colombo Harbour.

Unrest prevails again among the Colombo harbour traders as a result of the refusal by certain local shipping agents to allow them to board vessels in the harbour in order to carry on their trade. To board a vessel, licensed traders are required to obtain a special permit from the Principal Collector of Customs and, according to the regulations, these permits are issued only if they obtain the consent of the Master of the agents of the vessel. There have been cases recently when, owing to interference by the agents, harbour traders have refused permits although the ships officers themselves have consented to their trading on board.

During the visit, for instance, of the "Franconia" to Colombo a few weeks back, a licensed trader applied to the Staff Captain for permission to board the vessel and this was granted to him. Later, however, at the instance, it is alleged, of the agents of the vessel, the Captain withdrew the permission. "Traders are hard hit, particularly when permits are refused in instances such as this," one of them said, interviewed. "It is at long intervals that tourist vessels call at Colombo and disappointment in respect of their permits when such a vessel is in harbour, means missing a long looked-for opportunity. It is all the more distressing to them when they find the agents interfering ruthlessly to prevent their trading on board, when on the other hand both ships officers and passengers appear to welcome them.

"The present-day harbour traders are all licensed men and quite rigorous conditions are enforced by the Government in issuing licenses, including the deposit of large sums of money. There can thus be very little fear of dishonest practices by these people when they go on board for trading purposes."

Trading in harbour was a flourishing business before it came to be prohibited during the War. It was after several years' agitation that the prohibition was removed, subject, of course, to strict conditions.

P. and O. Company's New Australian Terminal Port.

Messrs. MacDonald, Hamilton and Co., the Australian agents for the P. and O. Co., announce that during the present year the company's service will be extended to Brisbane, which will become the Australian terminal port, in lieu of Sydney. Mr. D. J. Macay Sim, the resident Melbourne partner of MacDonald, Hamilton and Co., says that the P. and O. Co., running its steamers to Brisbane, passengers from that port would be able to put their luggage on board there and thus end their troubles until they reached Tilbury.

As some of the company's main line mail boats were now catering for third saloon passengers, the decision to extend to Brisbane would prove an added advantage to this section of the travelling public and also help to build up the trade. With respect to cargo all the vessels being fitted up with refrigerating machinery would be able to carry all classes of Queensland produce, including the main products, beef and mutton.

The P. and O. directors were most anxious to give exporters a chance with an extra regular scheduled fast fortnightly service to London. It is also pointed out that the B.I. Agency Co., which had its head office in Brisbane over 50 years ago, and was absorbed by MacDonald, Hamilton and Co., on January 1st, 1915, had brought cargo to Queensland ports via Torres Strait in B.I. vessels which terminated their run at Brisbane. A falling off in support extended to the service and a termination of a subsidy paid by the Queensland Government led to the closing of the service. The B.I. Agents for Australia are also MacDonald, Hamilton and Company.

Sugar Imports to India.

The imports of sugar through ports in British India in 1928-29 amounted to 868,800 tons valued at Rs.15.86 crores, as against 725,800 tons valued at 14½ crores in 1927-28. Java's production in the year 1928 was the highest on record and as Japan is now becoming less and less important as a buyer of the Java crop, the two principal markets for Java sugar are India and China. During the last year prices of sugar in the Indian markets began to decline with the arrival of heavy shipments of the new Java crop.

Shipbuilding in Ceylon.

The construction of sea-going vessels on a scale not hitherto attempted locally has been undertaken at Panadura, where a motor vessel of 200 tons, to ply between the Maldive Islands and Ceylon, has been constructed. The vessel is 90-ft. in length, with a beam of 18½-ft., and draft of 7½-ft. Built throughout of teak with planks 2½-in. thick, the vessel is estimated to cost Rs.100,000 odd. It is fitted with all modern conveniences, including electric light and fans, and is able to accommodate four first-class passengers in addition to 90 on the deck. The first-class cabins are extremely comfortable.

The vessel is oil-driven by means of a Dietz-Diesel engine supplied by Messrs. Freudenberg and Co. This vessel is one of six to be built for the Maldive Islands. At present freight rates between Ceylon and the Maldives are very heavy, the carrying trade being exclusively in the hands of Indians. The Maldive Government proposes to get out a large vessel from Europe, and six vessels of the size of the one just built will be used as feeder vessels for a passenger and goods service between the two islands. Each of these vessels is capable of carrying a cargo of 125 tons. They will be manned exclusively by Maldivians, and are also to be fitted with sails for use in an emergency.

Mr. Didi, the Maldivian representative in Ceylon, points out that cocoanuts are very expensive in Mauritius, and if local merchants fitted out vessels of their own to ply between the islands, they could escape the exorbitant freight charges that would ordinarily be demanded by European-owned vessels. Mr. Didi has, at the same workshop, built two sloops prior to this, at a cost of Rs.8,000 each. These were for private companies for service to ply among the Maldive Islands only.

Harbour Housing Scheme.

The Finance Committee of the Ceylon Legislative Council has agreed to the provision of quarters for the General Patrolling Officer and for an overseer in the vicinity of the Colombo Harbour in addition to the workmen's quarters as set out in the Colombo Port Commission Housing Scheme which was budgeted for in 1929-30.

Ceylon and Indian Notes—continued.

The Chairman, Colombo Port Commission, it will be remembered, reported that the Select Committee on the Budget for 1929-30 sanctioned the vote of Rs.35,000 under Sub-head 45, " Housing Scheme of Clerks and Workmen," Head 23, on the understanding that workmen's quarters only should be erected, the clerks' quarters being omitted. The chairman, however, found that quarters for the General Patrolling Officer and for one overseer were urgently required in the vicinity of the harbour, hence the chairman's request. The sum of Rs.35,000 voted will be utilised as follows:——

(a) To erect quarters for the General Patrolling Officer and for an overseer at an estimated cost of Rs.9,500. (b) To erect quarters for four married and sixteen single men at an estimated cost of Rs.18,600. (c) To fill Bloemendhal Swamp preparatory to erection of further quarters at Rs. 6,900.

Colombo Port Matters.

At a meeting of the Colombo Port Commission held recently a letter dated February 11th last, from the Chairman, Municipal Council and Mayor of Colombo was considered regarding the proposed re-allocation of water meters on the South-West Breakwater. The matter was discussed at length, and it was eventually decided to forward the following recommendations to the Chairman, Municipal Council and Mayor of Colombo:—

(1) That the existing emergency (No. 1) meter be allocated to the P. and O. S.N. Co., and that meters Nos. 14 and 15 be allocated to the Colombo Landing and Shipping Agency. (2) That in the event of the proposed re-allocation causing any serious loss of water supply to the P. and O. S.N. Co., the question of fitting an additional meter near No. 1 to be considered. (3) That the possibilities of increasing the main supply to these meters should be investigated.

The meeting also considered a letter from the Government Agent of Colombo inquiring if there is any objection to the allocation, to the Maldivian Government Representative, of about half of block 55 in Public Works Department Plan No. 6652, dated January 31, 1928. It was decided to inform the Government Agent that the Colombo Port Commission has no objection to the proposal, provided the block is divided by a line running approximately N.E. and S.W., and the Northern portion allocated to the Maldivian Government.

Personal.

His Excellency the Governor has been pleased to appoint the following gentlemen to be Unofficial Members of the Colombo Port Commission for a period of one year from 1st March, 1930: Mr. J. A. Tarbat, Mr. W. Duncan, Mr. R. W. Fowke and Mr. A. D. Skrine.

Colombo's Foreign Trade.

The general summary of trade shows reductions in declared value of both total imports and total exports for the two months, January and February, compared with the corresponding period of 1929. The value of merchandise imports during January and February, 1930, amounted to Rs.61,262,389, which shows a decrease of Rs.11,954,637 when compared with the two months in 1929. The exports total during this period were valued at Rs.58,447,537 and for the same months in 1929 the figure stood at Rs.70,901,392. In February only the imports were valued at Rs.26,803,119 and the domestic exports were a little less—Rs.16,567,140. Exports other than domestic were Rs.2,569,719, and the total exports for the month amounted to Rs.29,245,441, which was a slight increase over the previous month.

Belfast Port Affairs.

Seven Harbour Board Members Re-elected.

THE following seven members of the Belfast Harbour Board, who automatically retired in March, were re-elected without a contest: Mr. R. E. Herdman, D.L., Chairman; Mr. Robert A. Mitchell, L.L.B.; Sir Samuel Kelly, D.L.; Mr. Thos. Burns, J.P.; Sir Frederick Cleaver, Mr. R. P. C. Gotto and Mr. Oswald Jameson, D.L.

Sir Robert Baird, D.L., who acted as returning officer, said those who knew the value of the services given by the seven to the Harbour Trust were delighted that there was no opposition.

Chairman for Fifth Term.

At a meeting of the Belfast Harbour Board on the 1st April, Mr. R. E. Herdman was elected chairman for the fifth time. Mr. H. M. Pollock, who moved the re-election, said Mr. Herdman had been a member of the Board for 26 years and he (Mr. Pollock) could bear personal testimony to the zeal, earnestness, efficiency and assiduity Mr. Herdman had shown in the work of the Trust. The chairman could also look back with supreme satisfaction on what had been accomplished by the Board during the four years of his chairmanship and he (Mr. Pollock) hoped that his future experience would be equally satisfactory.

Mr. J. Milne Barbour, M.P., formally seconded the motion, which was carried by acclamation.

Mr. Herdman then took the chair and in returning thanks, expressed his appreciation of every member of the Board for their loyal support and co-operation, which made his position much easier than it otherwise would have been. He had also received the competent support of the members of the staff. They had all acted in a way that made for the best interests of the port, in which they took a deep pride. He would like to make a special reference to Mr. Watkins, who aimed at the highest measure of efficiency and whose one idea was the prosperity of the Trust.

At the same meeting the Harbour Master reported that 325 vessels arrived at the port during the period extending from the 16th to the 29th March, as follows:—

Coastwise and cross Channel, 293; foreign, 24; non-trading, 8.

The total tonnage of vessels which arrived from the 1st January to the 29th March, was:—

Coastwise and cross Channel, 626,677, an increase of 42,598 over the corresponding period of 1929; foreign, 145,350, a decrease of 18,212; non-trading, 38,976, an increase of 13,039. Total, 811,003, an increase of 37,425.

Speeding-up Grain Discharge.

Belfast will soon take its place with the important ports of Great Britain and foreign countries in the rapid discharge of grain. At present 500 tons are discharged daily, but under the new system 600 tons will be brought ashore daily.

The position was explained by one of the best-known shipowners in the city. He said: " Most importers have not been as enterprising as they might have been. This progressive step in Belfast is long overdue and is merely an attempt to keep pace with rivals in Great Britain. Cargoes were discharged so slowly at Irish ports that shipowners were showing a reluctance to unload at our ports.

" The new move is doubtless more to prevent the charging of extra freights for coming to Ireland. Shipowners indeed were beginning to consider the levying of extra freight charges because of the delay. Larger discharge means that the ship is idle; delay means small profits to the owner, and we are pleased that Irish ports are coming into line with British ports."

The change has been ratified by the Shipping Federation, the Corn Importers Association and the London Corn Trade Association.

Trans-Atlantic Traffic.

As a field for further development in the Transatlantic passenger traffic, Ulster has received a good deal of attention of late and in consequence Belfast figures very prominently in the schedule of some of the finest liners crossing the Atlantic. Up to recently it was a port of call mainly for ships carrying passengers to the Canadian Dominion, but the extension of the British quota made by the United States immigration authorities last year has given an impetus to the traffic between the North of Ireland and the United States. In the past intending passengers were called upon to wait a considerable time; in some cases two years, for the visa.

That under the new regulations the United States authorities subsequently increased the quota of persons from Great Britain and Northern Ireland, which means that instead of waiting two years visas are now obtainable almost immediately and intending emigrants can look forward with certainty to being in the States a few months after securing the visa.

To meet the increasing demand for accommodation the Cunard Co. have placed several of their most palatial post-war liners in the service from Belfast to the United States.

The Cunard Co. and the White Star Co. both wrote to the Belfast Harbour Board asking, in view of the anticipated increase in the emigration to the States, for additional accommodation at the Queen's Quay, Belfast, for dealing with passengers. Mr. Watkins, the General Manager of the Board, commented with the local representatives of two companies and later submitted to the members of the Board a plan showing a suggested scheme for a new building to contain accommodation for medical inspections and waiting and dressing rooms. The Board authorised the engineer to go ahead with the scheme.

Bombay Port Trust.

AT a meeting of the Trustees of the Port of Bombay, held on the 11th March, 1930, the following were the main items of business disposed of:—

Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., was re-elected as the representative of the Bombay Port Trust on the governing body of the I.M.M.T.S. "Dufferin" for the ensuing term of two years.

The audited accounts for the half-year ending 30th September, 1929, were approved for submission to Government and publication in the Bombay Government Gazette.

The tenders of Messrs. Wm. Laws and Co. and Messrs. Raoji Sojpal and Co. for the supply of sand and shingle for repair works, and the tender of Messrs. Bomanji Dhunjibhoy for the supply of daily labour for cleaning, painting, etc., Port Trust plant and vessels, during the year 1930-31, were accepted.

Offers aggregating about Rs.10,000 were accepted for certain unserviceable or surplus plant, including the old Light Vessel "Bombay," which was built in 1872 and has now been replaced by the new Unattended Light Vessel.

A ten-year renewal of lease of Rent Roll No. 124 (area about 400 square yards), Broach Street, Elphinstone Estate, was granted at a revised rate of rental.

The Trustees considered a letter from the Indian Merchants' Chamber on the subject of Indianisation of higher appointments in the Bombay Port Trust Service and approved reply in the following terms:—

With reference to your letter No. 185, dated 29th January, 1930, on the subject of Indianisation of the higher appointments in the Port Trust service, I am directed to say that your representation has been carefully considered by the Board of Trustees and I am to reply as follows. For convenience of reference the various subjects referred to in your letter are dealt with under separate headings.

(a) Indianisation of higher appointments in the Engineering Department (Civil Branch) of the Bombay Port Trust. The Trustees are not aware on what information you base your statement that "out of the 13 superior posts in the Civil Branch of the services, only one post is held by an Indian." Full details of the distribution of the various senior appointments were furnished to you under my letter No. 871 of 2nd March, 1928, from which it will be seen that the above statement is incorrect. In the Civil Branch of the department "the superior posts" are generally understood to include all appointments from sub-engineer upwards, i.e., all posts graded on a maximum of Rs.500 per month or over. There are at present 30 such posts (including that of the personal assistant), of which one is vacant, 7 are held by Europeans, 1 by a domiciled Anglo-Indian and 21 by Indians. Even if the designation of superior posts is restricted to the 14 most senior posts in the Civil Engineering Branch of the Department, which includes the post of Personal Assistant and eliminates all below the rank of Junior Assistant Engineer (Rs.600-40-800), it will be seen that your figures are incorrect, as the officers holding these posts consist of 7 Europeans, 1 domiciled Anglo-Indian and 5 Indians; one post remains to be filled.

As regards the prospects of the Indian Sub-Engineers in the service it will be observed from the preceding paragraph that there are already 5 Indian officers in the department who are senior to the Sub-Engineer grade and as you are aware, 2 Indian Sub-Engineers have recently been sent to England at the expense of the Port Trust in order to gain further experience in Dock and Harbour Engineering so as to qualify them for further promotion in the service when an opportunity offers. The future prospects of the existing Indian Sub-Engineers depend on vacancies and on the suitability of the individual officers for promotion to a position of greater responsibility when such an opportunity arises. I am to point out that 10 years ago not a single appointment in the department graded at Rs.500 a month or over was held by an Indian Officer and there were only two Indian Engineers drawing, with personal allowances, pay in excess of this figure. To-day 21 such appointments are held by Indian engineers. The Trustees hope that these facts will convince your committee of the intention and desire of the Board to Indianise the higher ranks of the department as and when opportunities occur.

(b) Indianisation of the Mechanical Engineering Branch and Dredging Service.—I am to inform you that the Trustees have at present a scheme under consideration for creation of a post of Assistant Mechanical Superintendent on probation, to be filled by an Indian possessing the requisite training. Details of the scheme will be furnished to your Chamber as soon as it is finally approved by the Board.

As regards your statement that the superior posts in the Mechanical Branch are entirely held by non-Indians, I am to say that this is not entirely correct as there are 9 Indians in the Mechanical, Dredging and Railway Engineering Branches graded at Rs.300 and over and one graded up to Rs.650. Ten years ago there were only 3 Indians graded at Rs.300 or over. The reason why the senior supervising posts are held by Europeans has already been explained in previous correspondence, i.e., that these posts on the mechanical side are of a specialised nature and are held by men of long experience and special training in mechanical engineering and that such men have hitherto not been available in India. The Port Trust has done what it can to encourage young Indians to take up mechanical engineering as a profession by regularly training a number of paid apprentices in their workshops; the Board are now considering a further extension in this direction, as indicated above. As vacancies occur the Trustees intend to make every effort to find suitable and qualified Indians to fill them.

As regards dredging officers I am to say that the same arguments apply in view of the specialised nature of their work. Qualified Indian Dredging Masters and Chief Engineers of Dredgers are still practically non-existent because the facilities for training men from their their youth up in dredger builders' yards and other specialised workshops do not exist in this country. The figure quoted above includes, however, 3 Indian Engineers of hopper barges in the dredging fleet graded at Rs.400-20-500. The Trustees will consider the feasibility of your suggestion as regards encouraging more Indian employees to obtain Board of Trade Certificates with a view to qualifying for promotion to dredging engineers as vacancies occur.

With reference to your remarks regarding Indians on the dredging establishment who hold an Inland Master's Certificate, I am to point out that this qualification bears no relationship to mechanical engineering, but is merely a navigational qualification. The Indian officers of the flotilla to whom you refer have no prospects in the service beyond the grade of Master.

(c) Indianisation of higher appointments in non-technical departments. The trustees are unable to follow your statement that "out of 35 higher posts in these non-technical services, only 3 posts are held by Indians at present." In my letter above referred to you were informed that out of 39 posts graded at Rs.500 or over in the secretary's accounts, stores, docks, land and bunders and railway departments, 14 were held at that time by Europeans, 8 by Indians and 17 by domiciled Anglo-Indians. The number of Indian officers has since increased to 9. A further step towards Indianisation has been taken by the appointment of two Indian probationers to the Docks Department with a view to future promotion to the higher posts when vacancies occur, subject to their proving their capability.

The Trustees are of opinion that the process of Indianisation in the Port Trust has been proportionately more rapid during recent years than in any other public body in India. In the non-technical departments, and even in semi-technical appointments such as the senior posts in the railway, docks and land departments, no European officer has been recruited for the past 7 years. Vacancies have been filled by Indians, either by recruitment from outside or by promotion. It is only possible to Indianise the departments as vacancies occur and this the Trustees are doing.

(d) Proposed publication of a statement detailing the qualifications and experience required for the higher appointments throughout the Port Trust. The Trustees are in agreement with the views on this subject which were communicated to you in my letter referred to above. When it is necessary to recruit officers from outside the service, the educational and other qualifications required are fully detailed in the advertisement. Your suggestion that the Port Trust should now publish in the Press and issue to the various educational institutions a statement detailing the educational qualifications required for all the senior posts throughout their service is, in the opinion of the Trustees, inpracticable. Service conditions are not immutable—changes in pay and cadre have to be made from time to time and the Trustees are not prepared to tie themselves down indefinitely to a particular schedule. They are further of opinion that it would be impossible to find a precedent in any public service for adopting the procedure you suggest.

At a meeting of the Trustees of the Port of Bombay held on 25th March, 1930, the following were the main items of business disposed of:—

Tenders were considered for the supply to the Port Trust of 600 tons cement for general repairs and maintenance works during 1930-31, and it was decided to accept the tender of the Okha Cement Company (Anchor Brand) for a portion of the order and that Messrs. Shapurji Pallonji and Co. (Swastika Brand) for the balance.

A revised estimate of Rs.84,800 was sanctioned for the installation of the necessary plant for lighting the pipe lines at Pir Pao to allow of night discharge of petrol. An expenditure of Rs.11,600 was also sanctioned for sett-paving and renewal of rail track in No. 4 transit shed, Victoria Dock.

Bombay Port Trust—continued.

A number of licenses for cleaning, painting and repairing vessels in the Merewether and Hughes Dry Docks were renewed for 1930-31.

The following leases were granted:—

A 99-year lease of a plot of land (area 2,027 square yards) at King Edward Road, Sewri, to Mr. Tokersey Jiwraj for a cinema theatre, shops and residences, subject to the necessary sanction of Government in respect of the period of the lease.

A 99-year lease of plot No. 37 (area 717 square yards) fronting Colaba Causeway, Apollo Reclamation, for erection of first-class residential flats and shops.

A 10-year lease of a plot of land (area 1,295 square yards) adjoining Poona Street, Elphinstone Estate, for a vegetable oil mill.

In connection with a reference from Government requesting the Trustees' views on the draft amendments of the Sea Customs Act, 1878, proposed in order to bring the provisions of the Act into line with modern conditions and simplify the procedure generally, the Board considered and approved for submission to Government a draft reply detailing their opinion and submitting suggestions as regards certain points on which the new provisions and the existing Port Trust rules and procedure are at variance.

In reply to a questionnaire prepared by the International Labour Office, Geneva, on the subject of the promotion of seamen's welfare in ports, the Board approved a statement of views on the questions concerning the Port Trust.

The Board placed on record their appreciation of the services rendered to the Port Trust by Captain E. V. Whish, O.B.E., R.I.M., during his tenure of the appointment of Port Officer, and wishing him every success in his new appointment of Principal Officer, Mercantile Marine Department.

An expenditure of Rs.8,200 was sanctioned to meet the cost of printing and publishing a descriptive history of the Port of Bombay compiled by order of the Trustees for local and foreign distribution for purposes of trade propaganda.

At a meeting of the Trustees of the Port of Bombay held on 8th April, 1930, the following were the main items dealt with:

Draft replies were approved to Questionnaires prepared by the International Labour Office, Geneva, on the subject of (1) the protection and treatment of seamen in case of sickness or injury and (2) regarding the regulation of hours of work on board ship, in so far as the Port Trust is concerned in these two questions.

Subject to the sanction of Government, Mr. C. N. Rich, Manager, B.P.T. Docks, was granted three months' leave from 9th June next, and Mr. F. A. Borissow, Dy. Manager, was appointed to act as Docks Manager.

On the retirement from service of Mr. J. McClure, M.Inst.C.E., Chief Engineer, Mr. G. E. Bennett, M.Sc., M.Inst. C.E., M.I.Mech.E., Dy. Chief Engineer, was appointed Chief Engineer, subject to Government sanction, and Mr. A. Hale-White, M.A.,M.Inst.C.E., was confirmed as Dy. Chief Engineer.

Sanction was accorded to the following estimates of expenditure:—

(1) Rs.7,400 against the relative budget provision for installing electric lights and fans in Prince's and Victoria Docks sheds and warehouses and Alexandra Dock Gatehouses;

(2) Rs.42,000 for construction of 5 additional jetha sheds at cotton depot, making a total of 16 open-sided sheds erected to meet the demand for additional covered accommodation for storage of cotton;

(3) A revised and reduced estimate amounting to Rs.8.20 lakhs for construction of an Overbridge at Sewri over the Port Trust and G.I.P. Harbour Branch Railways, the cost being shared proportionately by the Port Trust and the G.I.P. Railway. This Overbridge is an essential link in the Tripartite Road scheme agreed upon several years ago between the Port Trust, the Municipality and the Improvement Trust and designed to open up a through connecting road between Wadala and Sewri on the east side of the Island and Parel and the Western districts. The necessity for improving the road communications from East to West of the Island has become more urgent since the opening of the Harbour Branch Railway and the resulting delays to road traffic at the Sewri level crossings. The Port Trust portion of the Tripartite Road was completed several years ago, the municipal portion including the cutting through Golanji Hill is now in hand, but the Improvement Trust portion through Old Parel Village has not yet been started. The actual construction of the Overbridge will not be put in hand until sufficient progress has been made towards the completion of the Tripartite Road when the matter will again be considered by the Trustees.

The Board approved a scheme prepared by the chairman with a view to assisting the progress of Indianisation in the Mechanical Branch of the Engineering Department. Sanction was accorded to the creation of two new posts of Junior Assistant Mechanical Superintendent on Rs.400-25-500 p.m., which will be reserved for Indians; one post will be advertised immediately, and if necessary the successful applicant will be sent to Great Britain to obtain the additional experience and training in dredger-builders yard and selected engineering works necessary to qualify him for the higher posts in the mechanical branch of the Port Trust. The second post will be reserved for an Indian apprentice who will receive his primary training in the Port Trust workshops and whose parents or guardians will be required to undertake to send him to Great Britain to complete his training on the lines laid down, the Port Trust assisting by getting him placed at suitable engineering works and shipyards in Great Britain and generally supervising his progress.

The renewals of several leases on the Elphinstone Estate were considered and approved.

Glasgow Telegraphic Address—"Livadia, Glasgow."
Telephone—3743-4-5 Douglas.
BROWNLIE & MURRAY, LTD
STRUCTURAL ENGINEERS
POSSILPARK, GLASGOW.
London—59/60, Gracechurch St., E.C.3.
London Telegraphic Address—"Sequence (Bilgate) London."
Telephone—3454 Royal.

The Port of London Authority.

London's 1,000 Ships per week.

London's Traffic.

During the week ended 28th March, 968 vessels, representing 954,374 net register tons, used the Port of London. Of these 565 vessels (771,976 net register tons) were from or to foreign ports and 403 vessels (182,398 net register tons) were engaged in the Coastwise Trade.

Ten of the vessels brought cargoes of meat—seven from Australia, the "Port Dunedin," "Maloja," "Tainui," "Baradine," "Euripedes," "City of Delhi," and "Orvieto," and three from South America, the "Rodney Star," "Corinaldo" and "Highland Warrior." Together they discharged about 439,000 carcases of lamb and mutton, 99,000 quarters beef, quantities of pork and rabbits, and 38,000 packages of sundries.

* * * *

During the week ended April 4th, 1,071 vessels, representing 912,359 net register tons, arrived at and departed from the Port of London. Of these, 591 vessels (741,701 net register tons) were from and to foreign ports and 480 vessels (197,658 net register tons) were engaged in the coastwise traffic.

* * * *

During the week ended April 11th, 990 vessels, representing 1,012,125 net register tons, arrived at and departed from the Port of London. Of these, 593 vessels (838,730 net register tons) were from and to foreign ports and 406 vessels (173,395 net register tons) were engaged in the coastwise traffic.

No less than 13 meat vessels arrived in the Port. Nine were from Australia, the "Delphic," "Rangitane," "Comorin," "Cornwall," "Moreton Bay," "Rimutaka," "Port Denison," "Otranto" and "City of Glasgow," and four from South America, the "Viking Star," "Highland Hope," "Napier Star" and "Salland." Together they brought 618,000 carcases lamb and mutton, over 100,000 quarters beef, quantities of frozen pork and rabbits, and about 38,000 packages of sundries.

* * * *

During the week ended 17th April, 1,077 vessels, representing 879,892 net registered tons, used the Port of London. Of these 489 vessels (701,255 net register tons) arrived from or left for Colonial or foreign ports and 588 vessels (178,637 net register tons) were engaged in the coastwise trade.

Nine vessels with meat cargoes arrived during the week. Six were from Australia, the "Port Pirie," "Limerick," "Karamea," "Westmoreland," "Tamaroa," and "Port Chalmers," and three from South America, the "Hardwicke Grange," "Avelona Star" and "Gaelic Star." Together they brought approximately 495,000 carcases of lamb and mutton, 92,000 quarters of beef, and quantities of frozen pork and 25,500 packages of sundries.

Feeding London and the Provinces.

A cargo of meat ex the s.s. "Napier Star," just arrived from the Argentine, was dispatched from Victoria Dock for distribution to the London and provincial markets at the rate of one vehicle in less than every two minutes. In seven working hours 15,537 quarters chilled beef, 225 carcases mutton, 34 chilled cuts and 62 sides veal had been discharged and loaded into 271 vehicles.